CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., G.C.S.I.,
F.R.S., F.L.S., ETC.,
D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

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1901.

To

MAJOR DAVID PRAIN, M.B., F.R.S.E., F.L.S.

(*Superintendent of the Royal Botanic Gardens, Calcutta.*)

My dear Prain,

Your official position as head of the greatest Botanical establishment of the British Empire beyond the seas, might alone prompt me to offer to you the dedication of a volume of the Botanical Magazine; but to this I must add the great value of your botanical works, whether purely scientific or economic, your exertions in contributing to the Royal Gardens and Herbarium of Kew, and to the Botanical Magazine, and last, if not least, our cordial friendship.

Believe me,

Very sincerely yours,

Jos. D. HOOKER.

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Tab. 7692.

CORYANTHES MACRANTHA.

Native of Guiana and Venezuela.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Coryanthes, *Hook.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 549.)

Coryanthes *macrantha*; pseudobulbis 5–6-pollicaribus angustis alte costatis, foliis pedalibus oblongo-lanceolatis utrinque attenuatis, pedunculo valido pendulo bifloro, pedicellis 6-pollicaribus sulcatis basi bractea 2-pollicari spathacea instructis, floribus amplis expansis 6 poll. longis flavidis maculis sanguineis fere ubique conspersis, sepalo dorsali 2-pollicari oblongo-lanceolato torto, lateralibus maximis 4–5 poll. longis reflexis lunatis infra medium postice gibboso-lobatis apicibus tortis, petalis pendulis 2–2½ poll. longis lanceolatis undulatis, labelli maximi ungue pollicari robusto tereti basi lamellis 2 oblongis porrectis recurvis aucto hypochilio globoso-reniformi inflato 1½ poll. diam., epichilio maximo crateriformi basi in unguem latum dorso crasse 4–5-lamellatum lamellis reflexis angustato, antice truncato quadrilobo, columna crassa supra medium recurva dilatata apice contracta bicornuta cornubus obtusis incurvis.

C. macrantha, *Hook. Bot. Mag. sub* t. 3102. *Lindl. Gen. & Sp. Orchid.* p. 159. *Lindl. in Bot. Reg.* t. 1841. *Paxt. Mag. Bot.* vol. v. p. 31, *cum ic. Hartinger, Parad. Vindob.* p. 19, t. 32, fig. 2. *Linden, Pescatorea, t.* 30. *Rolfe in Orchid. Rev.* vol. iii. p. 41.

Gongora macrantha, *Hook. Bot. Misc.* vol. ii. p. 151, t. 80.

The noble Orchid here figured was discovered by the late David Lockhart, Superintendent (1823 to 1846) of the Trinidad Botanical Gardens, when on a visit to Caraccas in 1828, whence he brought plants which flowered in those gardens in the autumn of the following year. Lockhart's previous career was an eventful one, for he was the sole survivor of the staff of Captain Tuckey's ill-fated Expedition to the Congo River in 1816, to which he, then a young gardener at Kew, was appointed by Sir Joseph Banks, as assistant to Christian Smith, the naturalist to the Expedition. Lockhart sent a flower preserved in spirits to Sir William (then Dr.) Hooker, who figured and described it in his *Botanical Miscellany*. The specimen here figured, which flowered in a tropical house of the Royal Gardens, Kew, in May of last year, was received in the previous May from Mr. Hart, F.L.S., Super-

intendent of the Royal Botanical Gardens, Trinidad. The flowers remain fresh for about three days. Plants of it have also been sent to the Royal Gardens from the Demerara River by Mr. Jenman, F.L.S., Superintendent of the Botanical Gardens of Georgetown, and Government Botanist.

Descr.—*Pseudobulbs* five to six inches long, very narrow, deeply channelled, and with about eight stout, intervening, elevated ribs. *Leaves* a foot long, oblong-lanceolate, acuminate, narrowed to both ends from about the middle. *Peduncle* stout, pendulous, two-flowered; pedicels subequal, six inches long, stout, grooved, embraced at the base by an obtuse sheathing bract two inches long. *Flowers* up to six inches long from the lip to the outer margin of the lateral sepals. *Sepals* membranous, dorsal two inches long, oblong-lanceolate, twisted, flesh-coloured, speckled with red; lateral very large, four to five inches long by two inches broad, reflexed from the base and recurved, lunate, the dorsal margin dilated below the middle into a broad, rounded gibbous lobe, tip twisted, pale. *Petals* pendulous, two to two and a half inches long, undulate, and more or less twisted, dull pink, with a few red blotches towards the base. *Lip* clawed; claw an inch long, stout, terete, base with two parallel, white, oblong, obtuse, rather recurved, projecting, white lamellæ half an inch long; hypochile globosely reniform, an inch and a half in diameter, inflated, and claw closely streaked and spotted with orange-red; epichile an orange-yellow bucket, spotted with blood-red; truncate and three-lobed anteriorly, narrowed at the base into a triangular fleshy neck, which is dorsally furnished with four or five, reflexed, fleshy transverse lamellæ. *Column* very stout, greenish white, with a few red spots, dilated at the recurved top, which terminates in two short, obtuse horns, one on each side of the anther.—*J. D. H.*

Fig. 1, Top of the column with anthers; 2 and 3, pollinia :—*All enlarged.*

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Tab. 7693.

HAYLOCKIA pusilla.

Native of Uruguay.

Nat. Ord. Amaryllidaceæ.—Tribe Amaryllæ.

Genus Haylockia, *Herb.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 723.)

Haylockia *pusilla*; herba pusilla, bulbo globoso tunicato, tunicis fuscis appressis, foliis serotinis solitariis paucisve angustissime linearibus subacutis flaccidis viridibus supra concavis, floribus bulbo solitariis subsessilibus erectis, basi spatha bifida instructis, perianthii tubo 1½-pollicari gracili cylindrico, limbi infundibulari-campanulati segmentis patentirecurvis oblongis subacutis albis pallide roseis v. primulinis basin versus rubro striolatis, staminibus brevibus fauci perianthii insertis, filamentis subulatis, antheris lineari-oblongis versatilibus aureis, ovario spatho occluso brevi, stylo filiformi, stigmatibus 3 linearibus obtusis ore perianthii breviter exsertis, capsula parva trigona trisulca trivalvi, seminibus dorso convexis, testa nigra.

H. pusilla, *Herb. in Bot. Reg.* t. 1371; *Amaryllid.* pp. 59, 72, 182. *Kunth Enum. Pl.* vol. v. p. 480.

Sternbergia Americana, *Hoffmgg. Verz. Pfl.* p. 197 *cum ic.* *Gibert, Enum. Pl. Agr. Montevid.* p. 107.

Zephyranthes pusilla, *Dietr. Syn. Pl.* vol. ii. p. 1176.

Haylockia is a monotypic genus, established by the late Dean Herbert of Manchester, upon a little bulbous plant, a native of the neighbourhood of Monte Video and Maldonado, which flowered in his garden at Spofforth in 1830. It is closely allied to *Zephyranthes*. Herbert says of it, "with bulb, foliage, capsule, and seed that are scarcely distinguishable from *Zephyranthes*, it has a flower which is nearly that of a *Colchicum*." The only distinction between *Zephyranthes* and *Haylockia* appears to me to be, the almost total absence of a scape in *Haylockia*, the ovary being, with the spathe, sunk in the very short neck of the bulb. Two varieties of it are described, found growing together, one with straw-coloured, the other with pale rose flowers. The generic name commemorates the valuable services of Mr. Matthew Haylock, who had for twenty-two years the charge of the Spofforth collection of plants, and "who brought no small number, especially of this natural order, to blossom for the first time in this country."

January 1st, 1900.

Bulbs of *Haylockia* were received at the Royal Gardens, Kew, from Dr. Cantera of Montevideo, in 1898; these flowered in July, 1899, and threw up leaves in the following August. The flowers appear in quick succession for about a fortnight, but are very ephemeral.

Descr.—A dwarf, perfectly glabrous, bulbous herb. *Bulb* globose, scales brown, appressed. *Leaves* few, produced after the flowers, very narrowly linear, sub-acute, flaccid, green, concave above. *Flowers* solitary, sub-sessile, erect, white, pale rose-coloured or primrose-yellow, streaked with pink at the base of the perianth-lobes externally. *Perianth*-tube very slender, an inch and a half long, surrounded at the base by a bifid spathe, limb infundibular-campanulate, six-partite; segments oblong, spreading and recurved. *Filaments* short, subulate, inserted in the throat of the perianth; anthers versatile, linear-oblong, golden-yellow. *Ovary* embraced by the spathe and sheaths of the leaves; style filiform, stigmas three, linear, obtuse, shortly exserted from the throat of the perianth. *Capsule* small, trigonous, three-valved. *Seeds* black, dorsally convex.—*J. D. H.*

Fig. 1, Three perianth segments and stamens; 2, stigmas :—*Both enlarged.*

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Tab. 7694.

MACLEANIA insignis.

Native of Mexico.

Nat. Ord. Vacciniaceæ.—Tribe Thibaudieæ.

Genus Macleania, *Hook.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 506.)

Macleania *insignis*; ramulis robustis, foliis 1½–2-pollicaribus brevissime crasse petiolatis ellipticis oblongisve obtusis apiculatis basi rotundatis utrinques parsim punctulatis supra læte viridibus subtus pallidioribus novellis aurantiaco-coccineis, costa subtus crassa, nervis paucis arcuatis gracillimis, floribus axillaribus solitariis et fasciculatis foliis subæquilongis, pedicellis crassis medio minute 2-bracteolatis, calycis subobpyramidati 5-alati ore truncato 5-apiculato, corollæ 1¼-pollicaris coccineæ tubo cylindraceo lævi deorsum paullo dilatato, lobis brevibus triangularibus, antherarum loculis asperis in tubum angustum uniporosum apice 2-denticulatum productis, connectivo dorso incrassato, bacca globosa ½–⅔ poll. diam. 5-costata alba costis rubris.

M. insignis, *Mart. & Gal. in Bull. Acad. Brux.* vol. ix. (1842) p. 531. *Walp. Rep.* vol. ii. p. 724; *Ann.* vol. i. p. 478. *Klotzsch in Linnæa*, vol. xxiv. (1857) p. 20.

Fifteen species of the beautiful genus *Macleania* are enumerated in the "Index Kewensis," of which five, including *M. insignis*, have been figured in this Magazine. The earlier ones are *M. angulata*, Hook., t. 3979; *M. punctata*, Hook., t. 4426; *M. speciosissima*, Hook., t. 5453, and *M. pulchra*, Hook., t. 5465. The names of three out of the six bespeak their exceptionally ornamental character.

M. insignis is a native of Mexico, where it was discovered in the Province of Vera Cruz, by Galeotti, in 1840, growing epiphytically on oaks, at an elevation of four thousand to six thousand feet, flowering in April. Galeotti describes it as bulbous, referring, no doubt, to the tuberous base of the stem, so characteristic of many epiphytic *Vacciniaceæ*. It has also been collected by Linden, and by Jurgensen. Specimens from the latter (No. 969) in the Kew Herbarium have much longer leaves than those here represented. The species was introduced into Europe many years ago, and is not uncommon in gardens. The specimen here figured was sent to me by

Mr. Lynch, from the Botanical Gardens of the University of Cambridge. It is a green-house plant, flowering in June and July.

Descr.—A small, evergreen, glabrous shrub, with stem tuberous at the base. *Branches* very stout, leafy; bark brown. *Leaves* one and a half to two inches long, very shortly and stoutly petioled, oblong or elliptic, obtuse, subacute or apiculate, coriaceous, minutely distantly punctate on both surfaces, bright green above, paler beneath; young brick-red; nerves few, very slender, arched. *Flowers* solitary and fascicled in the axils of the leaves; pedicels very stout, one quarter to half an inch long or more, minutely bibracteolate about the middle, green. *Calyx* obpyramidal, five-winged, green, mouth truncate, minutely five-toothed. *Corolla* an inch and a half long, tubular, terete, slightly dilated downwards, scarlet; lobes small, triangular, spreading. *Filaments* united in a membranous tube; anther-cells prolonged into a single tube with an oblong, terminal, anticous pore, and a two-toothed tip; connective dorsally thickened. *Berry* globose, white, with five red ribs.—*J. D. H.*

Fig. 1, portion of leaf; 2, calyx and style; 3, four stamens, front view; 5, a single stamen, side view:—*All enlarged.*

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Tab. 7695.

DIOSTEA juncea.

Native of Chili.

Nat. Ord. Verbenaceæ.—Tribe Verbeneæ.

Genus Diostea, *Miers*; (*in Trans. Linn. Soc.* vol. xxvii. 1871) p. 102.)

Diostea *juncea*; frutex v. arbuscula fere glaberrima, e basi ramosa, sparsifolia, ramulis gracilibus virgatis oppositis v. 3–4-natim verticillatis erectis decurvisve, internodiis valde elongatis teretibus fistulosis, foliis parvis oppositis sessilibus oblongis ovato-oblongisve obtusis paucicrenatis crassiusculis, floribus parvis in spicas densifloras pedunculatas breves v. demum elongatas dispositis basi bracteolatis, bracteola minuta oblonga, calyce brevi tubulosa truncata breviter 5-dentata pubescente, dentibus obtusis æqualibus v. postico longiore, corolla tubo calyce ter quaterve longiore tubulosa decurva supra medium gibboso-inflata pallide lilacina intus pilosa, ore paullo constricto, limbo parvo patente 5-lobo, lobis rotundatis, staminibus medio tubo corollæ insertis didynamis quinto sæpe imperfecto v. 0, connectivo dorso incrassato, disco annulari, ovario 2-loculari, loculis 1-ovulatis, stylo gracile apice clavellato, stigmate simplici.

D. juncea, *Miers*, *l.c.* p. 103, t. 28.

D. chamædryfolia, *Hort. Kew.* (*non Lippia chamædryfolia*, Stend.)

Baillonia juncea, *Benth. in Gen. Plant.* vol. ii. p. 1144.

Dipyrena dentata, *Philippi in Linnæa*, vol. xxix. (1857-8) p. 22.

Lippia juncea, *Schauer in DC. Prodr.* vol. xi. p. 573. *C. Gay, Fl. Chil.* vol. v. p. 30. *Philippi l.c.* vol. xxxiii. (1864-5) p. 196.

Verbena juncea, *Hook. et Gill. in Hook. Bot. Misc.* vol. i. (1830) p. 162.

Diostea is a very curious genus, closely allied to *Lippia*, but differing remarkably in habit, in the slender green branches, and in the branchlets being cylindric, fistular, with very long internodes. It was founded on *Verbena juncea*, Hook. & Gill., by Miers, who describes seven species, all Chilian.

Bentham, who elaborated the *Verbenaceæ* for the "Genera Plantarum," referred *D. juncea* with *D. infuscata*, Miers, and *valdivicna*, Miers, as synonyms, to Bocquillon's genus *Baillonia*, a Paraguayan plant, of which he had seen no specimens. The latter has been acquired for the Kew Herbarium, and proves to be generically different from *Diostea*. Miers' other species, *D. scoparia*, *stenophylla*, *filifolia* and

scirpea, are all referred by Bentham to *Verbena*, but they have all precisely the same habit as *D. juncea*, and I should not be surprised if they proved to be forms of that plant. Walpers (Repertorium iv. 16) includes *D. juncea* and some of the others in a section (*Junceæ*) of *Verbena*, together with some other *Verbenaceæ*, which, as Miers observes, have no affinity with these.

In *D. juncea* the teeth of the calyx vary a good deal in development, being sometimes hardly perceptible; the stamens vary in number; of the specimens cited by Miers, the type, that collected by Gillies, has no fifth, which is present in Macrae's and Bridge's specimens.

D. juncea is a native of the Chilian and Argentine Andes, at elevations of three thousand to five thousand feet, from the latitude of Mt. Aconcagua to that of Valdivia. There are three small trees of it in the Royal Gardens, Kew, in a bed close to No. 2 House, where they flower in June; they were raised from seed received about ten years ago, but there is no record of their source.

Descr.—A bush or small tree, branching from the base; branches erect, spreading, or recurved, branchlets opposite, ternate, or quaternate, internodes very long, green, terete, fistular, when dry constricted as if jointed at the nodes. *Leaves* in very distant pairs, rarely one inch long, opposite, sessile, oblong or ovate-oblong, obtuse, crenate, green, rather fleshy, glabrous, or very minutely puberulous. *Flowers* crowded in peduncled axillary and terminal spikes, one inch long or more, spreading and decurved, pale lilac, a quarter of an inch long, rhachis of spike pubescent. *Calyx* shortly tubular, pubescent, mouth truncate, unequally very shortly five-toothed. *Corolla* three to four times as long as the calyx, tubular, inflated beyond the middle, hairy within, quite glabrous externally; mouth constricted; lobes five, very short, rounded, spreading. *Stamens* four, didynamous, with or without a more or less imperfect fifth. *Ovary* two-celled; style very slender, tip clavellate. —*J. D. H.*

Fig. 1, flower and bracteole; 2, portions of corolla with stamens; 3 and 4, anthers; 5, ovary; 6, vertical, and 7, transverse section of the same :—*All enlarged.*

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Tab. 7696.

RHODODENDRON arboreum, *var.* Kingianum.

Native of Manipur.

Nat. Ord. Ericaceæ.—Tribe Rhodoreæ.

Genus Rhododendron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 599.)

Rhododendron *arboreum*, var. *Kingianum*: frutex robustus, ramulis crassis, cortice brunneo, foliis apices versus ramulorum confertis 2–3-pollicaribus breviter petiolatis oblongis v. ovato-oblongis obtusis convexis marginibus late recurvis subcoriaceis supra læte saturate viridibus inter nervos utrinque costæ 8–10 arcuatos valde impressos bullatis, subtus tomento arcte appresso flavido opertis costa nervisque robustis, petiolo robusto, floribus in corymbum capitatum amplum multi-densiflorum congestis breviter crasse pedicellatis, pedicellis glanduloso-pilosis, calycis brevis cupularis lobis rotundatis glanduloso-ciliatis, corolla campanulata tota saturate coccinea fulgida immaculata, limbo 1½ poll. diam. 5-lobato, lobis patulis bilobulatis, staminibus 10 declinatis, filamentis tubo corollæ paullo longioribus glaberrimis roseis, antheris parvis brevibus fusco-purpureis poris magnis, ovario 10-loculari strigilloso, stylo glaberrimo roseo, stigmate annulato minute 10-lobo.

R. Kingianum, *Watt mss. ex Gard. Chron.* 1899, vol. ii. p. 306, fig. 102.

A remarkably beautiful member of a genus abounding in strikingly handsome species, happily bearing the name of Sir George King, the distinguished late Superintendent of the Royal Botanic Gardens of Calcutta, who in that capacity has rivalled his great predecessor Wallich in the advancement of Indian Botany. *R. Kingianum*, Watt, is obviously a form of *R. arboreum*, from the type of which it differs in the crowded, strongly bullate, very dark, almost glossy, broader leaves, with broadly recurved margins and deeply impressed nerves; in the well developed five-lobed calyx; in the more deeply two-lobed divisions of the corolla, which is of a more intense scarlet, rivalling in that respect *R. Thomsoni*, Hk. f. (tab. 4797); and in the rose-coloured stamens.

Var. *Kingianum* was discovered by Dr. G. Watt, F.L.S., Reporter on the Economic Products of India, when on a tour of inspection in 1882, upon a mountain called Ching Low in Manipur, at an elevation of nine thousand feet above the sea. Plants of it were raised at the Royal

Gardens, Kew, from seeds sent by Dr. Watt in 1882, one of which flowered for the first time in the Himalayan wing of the Temperate House in June, 1899, a flowering branch of which is here figured. The leaves attain a length of six inches in native specimens.

Descr.—A robust shrub. *Branches* very stout, glabrous, covered with brown bark. *Leaves* crowded towards the ends of the branches, very shortly petioled, spreading and recurved, two to three inches long, oblong or ovate-oblong, convex, above bullate, dark shining green, with impressed reticulate nervules, margins recurved, beneath clothed with appressed fulvous tomentum; petiole very stout. *Flowers* very many, crowded in a globose, sessile head, five inches in diameter, bright deep scarlet; pedicels very short, glandular-pubescent. *Calyx* short, broad, cupular, five-lobed, lobes rounded. *Corolla* campanulate, bright scarlet, without spots, limb an inch and a half in diameter, five-lobed; lobes short, rounded, spreading, rather deeply bilobulate. *Stamens* ten, declinate, filaments slender, quite glabrous; anthers small, dark brown. *Ovary* strigose, ten-celled; style slender, glabrous, stigma annulate, minutely ten-lobed.—*J. D. H.*

Fig. 1, calyx and pistil; 2 and 3, stamens; 4, transverse section of ovary: —*All enlarged.*

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Tab. 7697.

EUCALYPTUS FICIFOLIA.

Native of South-western Australia.

Nat. Ord. Myrtaceæ.—Tribe Leptospermeæ.

Genus Eucalyptus, *L'Her.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 707.)

Eucalyptus (Corymbosæ) *ficifolia*; arbor mediocris, umbrosa, cortice persistente rimoso, ramulis robustis, foliis petiolatis sparsis v. suboppositis 4–6-pollicaribus ovatis v. ovato-lanceolatis acuminatis in petiolum decurrentibus subæquilateris tenuiter coriaceis supra saturate viridibus subtus opacis, nervis innumeris patulis circumficiali margini proximo, glandulis oleiferis obscuris, umbellis simplicibus v. subpaniculatis 4–6-floris, pedicellis subæqualibus teretibus, calycis tubo pyriformi tereti ⅔ poll. longo ore vix constricto, operculo tenui brevi depresso, filamentis coccineis, antheris omnibus fertilibus, fructu ovoideo v. urnæformi 1–1½ poll. longo 3–4-loculari, oris margine acuto, valvis demum depressis, seminis ala decurrente nucleo longiore translucida.

E. ficifolia, *F. Muell. Fragm.* vol. ii. p. 85; *Eucalyptographia*, Dec. vii. *cum ic.*; *Rep. Forest Region of W. Australia*, p. 5, t. 3; *Benth. Fl. Austral.* vol. iii. p. 256; *Hemsl. in Gard. Chron.* 1883, vol. ii. p. 465 *fruct.* View of scenery with *E. ficifolia*, in North Gallery, Royal Gardens, Kew, No. 789.

According to the late Baron Sir F. Mueller, the author of *E. ficifolia*, "hardly any thing can be more gorgeous than forests of this tree seen at the end of January and beginning of February, when the flowers diffuse a rich red hue over the dark green foliage of the landscape." It is a native of a very narrow area in the extreme south-west point of Australia. There, according to Muir and Maxwell (as cited by Mueller in his Report on the Forest Region of Western Australia) it is restricted to a narrow belt extending from the west side of Irwin Inlet, to the mouth of the Shannon River, hardly reaching the coast, and not beyond eight miles inland; there it forms a tree seldom exceeding fifty feet in height. The quality of the timber is unknown. Mueller, in his "Fragmenta," gives Broken Inlet as the habitat.

The nearest ally of *E. ficifolia* is the geographically contiguous W. Australian *E. calophylla*, Br. (t. 4036, *E. splachnicarpon*, Hook.), the Red gum of King George's

Sound, which differs chiefly in having nearly white filaments.

The specimen here figured was sent to the Director of the Royal Gardens, Kew, by General Abadie, C.B. It was taken from a plant growing in a cool Palm House in the gardens of Mrs. Fitzroy Fletcher, of Letham Grove, Arbroath, N.B., where it was raised from seed sent from Australia about seven years ago. Mrs. Fletcher informs me that the young plant grew very fast, soon flowered, and has continued to do so yearly in August.

Descr.—A moderate-sized, umbrageous tree, with stout branches, and persistent, furrowed bark. *Leaves* scattered and sub-opposite, four to six inches long, ovate or ovate-lanceolate, finely acuminate, base narrowed into a red petiole one to two inches long, thinly coriaceous, very dark green above, with a yellow-green midrib and margins, paler and not shining beneath; nerves very numerous, slender, transverse. *Umbels* very large, simple or sub-compound, four to six-flowered; pedicels terete, slender, an inch to an inch and a half long. *Calyx* about three-quarters of an inch long, pyriform, green, mouth not or hardly contracted, lobes connate in a depressed conical, deciduous cap. *Stamens* very numerous, forming a scarlet cup two inches in diameter, with minute, dark red anthers. *Fruit* ovoid or urn-shaped, an inch to an inch and a half long, an inch and a quarter in diameter, mouth contracted with a narrow rim, valves deep down in the body of the fruit, connivent.—*J. D. H.*

Fig. 1, cap of sepals; 2, section of ovary with style:—*Enlarged.*

M. Gadel. et N. Fitch. ad nat.

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Tab. 7698.

LOMATIA longifolia.

Native of South-Eastern Australia.

Nat. Ord. Proteaceæ.—Tribe Embothrieæ.

Genus Lomatia, *Br.* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 183.)

Lomatia *longifolia*; frutex v. arbuscula fere glaberrima, ramulis novellis et inflorescentia minute strigillosis, ramis gracilibus, foliis 4–8 poll. longis sessilibus v. breviter petiolatis linearibus et lineari- v. oblongo-lanceolatis acuminatis basi acutis remote dentatis supra læte viridibus subtus pallidis glaucescentibus, nervis distantibus tenuissimis, costa subtus prominula, racemis apices versus ramulorum numerosis axillaribus et terminalibus foliis brevioribus v. longioribus erecto-patentibus multilaxifloris, rhachi gracili pedicellisque $\frac{1}{4}$–$\frac{1}{3}$ poll. longis viridibus, perianthii $\frac{1}{2}$ poll. expans. pallide albi virescentis segmentis linearibus patenti- revolutis apicibus ovato-dilatatis, antheris parvis late ovatis sessilibus, glandulis hypogynis 3 globosis, ovario ellipsoideo glaberrimo, stipite curvo elongato, stylo stipite breviore decurvo, stigmate dilatato peltato trigono, folliculo pollicari stipitato decurvo gibboso oblongo-lanceolato glaberrimo tenuiter coriaceo polyspermo, stylo persistente, seminibus oblongis imbricatis ala nucleo longiore.

L. longifolia, *Br. in Trans. Linn. Soc.* vol. x. p. 200. *Lindl. in Bot. Reg.* t. 442. *Meissn. in DC. Prodr.* vol. xiv. p. 447. *Benth. Fl. Austral.* vol. v. p. 537.

Embothrium myricoides, *Gærtn. f. Fruct.* vol. iii. p. 215, t. 218.

E. longifolium, *Poir in Lam. Dict., Suppl.* vol. ii. p. 551.

Tricondylus myricæfolius, *Knight, Proteac.* p. 122.

Lomatia longifolia is an evergreen shrub, or small tree, attaining the height of twenty to twenty-five feet, with very variable foliage. It is a native of New South Wales, from the neighbourhood of Sydney westward to the Blue Mountains, and southward to Two-fold Bay, near Cape Howe. It has also been found by F. Mueller on the King River, Mitta-Mitta and Buffalo ranges of the Victoria Alps. According to Lindley (in the "Botanical Register," quoting Sweet's "Hortus Britannicus") it was introduced into England in 1816. It has long been in cultivation in the Royal Gardens, Kew, where it flowers, in the Temperate House, in July.

Descr.—An erect shrub or small tree, glabrous, except the young parts, which bears a scattered, ferruginous, deciduous, appressed pubescence; branches slender.

Leaves very variable, four to eight inches long, sessile, or very shortly petioled, from narrowly linear to oblong-lanceolate, acuminate, distantly toothed, base acute; midrib beneath stout; nerves few, very slender. *Racemes* peduncled, axillary in the uppermost leaves and terminal, longer or shorter than the leaves, erecto-patent, laxly many-flowered; peduncle and rhachis slender; pedicels one-fourth to one-third of an inch long, often binate; bracts none. *Flowers* about half an inch broad, greenish white. *Perianth-segments* linear, revolute beyond the middle, tips dilated, broadly ovate, obtuse. *Anthers* small, sessile; cells divaricate, meeting at their tips. *Hypogynous glands* three, globose. *Ovary* on a long stout stipes, ellipsoid, glabrous, narrowed into very stout incurved style with a broad peltate obtusely trigonous stigma. *Capsule* an inch long, thinly coriaceous, stipitate, gibbously oblong-lanceolate, laterally compressed, smooth, glabrous, many-seeded. —*J. D. H.*

Fig. 1, flower and pedicel; 2, pedicel, glands, and pistil; 3, capsule; 4, interior of the same with one wall removed, showing the seeds; 5, embryo (figs. 3–5 from Gærtner):—All but figs. 3 and 4 *enlarged*.

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Tab. 7699.

PHLOMIS LUNARIFOLIA.

Native of Asia Minor.

Nat. Ord. Labiatæ.—Tribe Stachydeæ.

Genus Phlomis, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 1214.)

Phlomis (Dendrophlomides) *lunarifolia*; frutex erectus, cano-tomentosus, caule ramisque 4-gonis, foliis oblongis ovato-oblongisve obtusis inferioribus longe petiolatis basi truncatis cuneatis v. cordatis superioribus sessilibus supra viridibus reticulatis subtus cano-virescentibus nervis utrinque costæ ad 5 ascendentibus supra impressis subtus prominulis, nervulis validis reticulatis, capitulo amplo ad 4 poll. diam. depresso multifloro foliis 2 deflexis anguste oblongis suffulto, bracteis parvis imbricatis orbicularibus cuspidatis pilosis, calyce fere recto stellatim pubescente, lobis 5 brevissimis latis retusis, sinibus cuspide patula instructis, corolla 1½-poll. longa aurea, galea villosa alte obtuse bicarinata apice retusa, labio inferiore bialato alis rotundatis, filamentis infra medium pilosis longioribus appendiculatis, nuculis glabris.

P. lunarifolia, *Sibth. & Sm. Prodr. Fl. Græc.* vol. i. p. 414 (*excl. hab.*). *Benth. in DC. Prodr.* vol. xii. p. 541 (*excl. hab.*). *Unger & Kotschy, Die Insel Cypern*, p. 275. *Boiss. Fl. Orient*, vol. iv. p. 785 (lunariæfolia).

P. imbricata, *Boiss. in Bourg. Pl. Lyc. exsicc.* (1860).

A very handsome Labiate described as shrubby, though more probably an undershrub, attaining in its native country six feet in height, with flowering branches a foot long. It is described by Boissier as a native of Lycia, Cilicia, and the Island of Rhodes, but I suspect that the latter is a mistake for Cyprus, for the collector's name given for Rhodes is Kotschy (No. 678), and the precise habitat Chrysochu; and there is a specimen of *P. lunarifolia* in the Kew Herbarium with the same number and habitat, ticketed as from Cyprus, by Kotschy. The species is also included in Unger and Kotschy's "Die Insel Cypern" (published in 1865), a record overlooked by Boissier. The habitat of Peloponnesus, given in Sibthorp and Smith's Prodromus, repeated in DC. Prodr., &c., arose, as Boissier points out, from a confusion of the species with *P. samia*, L.

The Royal Gardens are indebted to E. Whittall, Esq., of Smyrna, for seeds of *P. lunarifolia*, collected in the

Davas Dagh in 1895; a plant raised from which flowered in the open border in June, 1899.

Descr.—An erect, branching undershrub, attaining six feet in height, with appressed-tomentose, green branches and leaves. *Lower leaves* long petioled, oblong or ovate-oblong, obtuse, base acute, truncate, or cordate, upper smaller, sessile by a narrow base, all rather dark green above, with four or five pairs of impressed ascending nerves, and copious reticulations, beneath paler, almost hoary with very strong nerves and anastomosing nervules. *Head* of flowers a depressed sphere four inches in diameter, with two pendulous narrowly oblong leaves, three or more inches long, at the base. *Bracts* small, orbicular, cuspidate, membranous, more or less stellately hairy. *Calyx* three-fourths of an inch long, erect, nearly tubular, ten-ribbed, hirsute, with stellate hairs; mouth truncate, rather oblique; lobes five, short, very broad, membranous, retuse, alternating with as many cuspidate spreading teeth. *Corolla* one inch and a half long, golden-yellow; upper lip villous, with two dorsal elevated obtuse keels extending to the retuse tip; lower lip expanded at the end into two orbicular wings. *Filaments* hairy below the middle.—*J. D. H.*

Figs. 1 and 2, bracts; 3, calyx and style; 4, stellate hairs of calyx; 5, portion of corolla and stamens; 6 and 7, anthers; 8, disk and ovary:—*All enlarged.*

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Tab. 7700.

ARISÆMA FLAVUM.

Native of the Western Himalaya.

Nat. Ord. Aroideæ.—Tribe Arineæ.

Genus Arisæma, *Mart.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 965.

Arisæma (Pedatisecta) *flavum*; monoicum, rhizomate globoso, vaginis appressis petiolisque pallide rufo-brunneis striatis, foliis binis pedatisectis, foliolis 7–11 sessilibus vel petiolulatis oblongo- v. lineari-lanceolatis acuminatis cuspidatisve læte virescentibus basi cuneatis intermedio majore, vagina elongata, pedunculo petiolo subæquilongo viridi, spathæ viridis intus purpureo-fasciatæ tubo subgloboso cancellato, limbo tubo longiore v. æquilongo late ovato v. orbiculari incurvo cuspidato, cuspide erecto v. recurvo marginibus basi vix recurvis, spadice subsessili brevi oblongo v. conico incluso, ovariis pauci- v. multi-seriatis obovoideo-globosis, stigmate pulvinato, antheris dense congestis obovoideis, appendice brevi clavato, baccis cuneato-obovoideis.

A. flavum, *Schott, Prodr. Syst. Aroid.* p. 40. *Engler, Arac. in Alph. & Cas. DC. Monog. Phan.* vol. ii. p. 548. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 503.

A. abbreviatum, *Schott in Œster. Bot. Zeitschr.* 1857, p. 382; *Prodr.* p. 39. *Engler, l.c. et Ic. ined.* No. 7.

Dochafa flava, *Schott, Syn. Aroid.* p. 24; *Gen. Aroid. App.*

Arum flavum, *Forsk. Fl. Ægypt. Arab.* p. 157.

Arisæma flavum is a remarkably variable plant, from six inches to nearly twenty-four inches in height, with a root-stock from the size of a small nut to that of a walnut; a stem sometimes as thick as the thumb; leaves four to nearly twelve inches span, with seven to eleven sessile or petiolulate leaflets varying greatly in breadth; a spathe one to three inches long, of a green to yellow colour. The ovaries are often numerous, ripening into an oblong infructescence sometimes three inches long and two in diameter. Its Himalayan distribution is a wide one, from Garwhal, at an elevation of eight thousand to nine thousand feet, to Kashmir at six thousand five hundred feet, and in the Kurrum Valley (Afghanistan) at seven thousand to nine thousand feet. It has not been collected at any locality between that last given and Arabia, where it was discovered by Forskål in 1763. The latter author describes it as 2–3-leaved, with a yellow spathe two inches long, and spadix an inch long.

February 1st, 1900.

The specimens here figured were raised from seed sent to the Royal Gardens, Kew, by Mr. Duthie, F.L.S., Director of the Botanic Department, Northern India, in 1896. They flowered in a greenhouse in June, 1899.

Descr.—Very variable in the size of all its parts, but the spathe rarely exceeding an inch in length. *Sheaths* embracing the petiole and peduncle, pale red brown, streaked with darker brown. *Leaves* two, pedatisect; leaflets seven to eleven, usually lanceolate, acuminate, bright green, the central largest and broadest; petiole pale brown, striated, its sheath very long. *Peduncle* about as long as the petiole, green. *Spathe* short, green, or yellowish, purple within, streaked with green; tube globose, striate and trellised; limb open, very broadly ovate or orbicular, incurved, cuspidately acuminate, with the tip ascending or recurved. *Spadix* sub-sessile, short, included, androgynous. *Fem. infl.* of few rows of obovoidly globose ovaries with pulvinate stigmas. *Male infl.* longer, of crowded anthers. *Appendage* clavate, much shorter than the inflorescence.—*J. D. H.*

Fig. 1, base of spathe and spadix; 2, anthers; 3, ovary; 4, the same vertically halved; 5, an ovule:—*All enlarged.*

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Tab. 7701.

IRIS obtusifolia.

Native of Persia.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

Iris (Pogoniris) *obtusifolia*; rhizomate robusto breviter repente, foliis 6 distichis laxis caule brevioribus ligulatis obtusis pallide viridibus, caule simplici subpedali capitulo unico terminali unico laterali sessili prædito, spathæ valvis magnis oblongis obtusis valde ventricosis, pedicellis brevissimis, perianthii sulphurei tubo brevi cylindrico, limbi segmentis exterioribus obovato-cuneatis e medio recurvatis barbâ aurantiaca densa præditis, segmentis unguiculatis erectis interioribus æquilongis, styli ramis perianthio distincte brevioribus cristis deltoideis irregulariter dentatis.

This new Iris is nearly allied to *I. lutescens*, Lam. (Bot. Mag. t. 2861), and *I. Statellæ*, Todaro (Bot. Mag. t. 6894), from both of which it differs by its laxly arranged obtuse leaves, very ventricose spathe-valves, and by having a sessile lateral cluster of flowers in addition to the end one. It was discovered by the late Lieutenant-Colonel Henry Lake Wells in the year 1895, in the province of Mazanderan, on the south of the Caspian Sea. Colonel Wells describes this province as "a lovely country, full of beautiful flowers, and amongst others I found a yellow Iris, growing beside the streams at an elevation of about seven thousand feet above sea-level." He sent it in 1897 to the Royal Gardens, Kew, in a living state, and our drawing was made from a plant that flowered in the bulb-house in April, 1899.

Descr.—*Rootstock* robust, shortly creeping. *Leaves* six, distichous, mostly basal, pale green, ligulate, obtuse, the largest six or eight inches long at the flowering season, by an inch broad. *Stem* a foot long, bearing one terminal and one sessile lateral cluster of flowers. *Spathe*-valves oblong-navicular, very ventricose, two or three inches long, pale green at the flowering season; pedicels very short. *Perianth* sulphur-yellow; tube very short; outer segments of the limb obovate-cuneate, two inches by an

inch broad above the middle, reflexing from the middle, furnished with an orange-yellow beard more than halfway up; inner segments erect, as long as the outer, cordate-orbicular, with a short, narrow claw. *Style*-branches pale yellow, an inch long; crests deltoid, irregularly toothed on the outer edge.—*J. G. Baker.*

Fig. 1, front view of anther; 2, back view of anther; 3, apex of style-branch, with crests: *all enlarged*; 4, entire plant: *much reduced.*

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Tab. 7702.

STANHOPEA Rodigasiana.

Native of New Grenada.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Stanhopea, *Frost*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 549.)

Stanhopea *Rodigasiana*; pseudobulbis ovoideis parvis monophyllis, foliis breviter petiolatis lanceolatis acuminatis trinerviis, scapis elongatis pendulis unifloris, bracteis spathaceis oblongo-lanceolatis acuminatis membranaceis, floribus amplis, sepalis patentibus ovato-oblongis subobtusis concavis dorsali angustiore, petalis triangulari-lanceolatis superne attenuatis et recurvis sepalis æquilongis, labello carnoso sepalis paullo longiore, hypochilio elongato superne paullo dilatato basi ecornuto, mesochilii cornibus valde prominentibus apice utrinque dilatatis triangularibus acutis antice longe unisetosis, epichilio articulato triangulari-elongato obtuso canaliculato basi paullo dilatato et saccato, columna elongata inferne teretiuscula deinde utrinque alata, alis angustis denticulatis apice utrinque in cornu breve oblongum denticulatum extensis, rostello longiuscule et divergente bisetoso, anthera generis.

S. Rodigasiana, *Claes, ex Cogn. in Chronique Orchidéenne*, p. 134. *Gard. Chron.* 1898, vol. ii. pp. 14, 31, 32, fig. 9. *Gard. Mag.* 1898, p. 492, with figure.

The genus *Stanhopea* was established in the present work in 1829, on a plant which flowered in the Royal Gardens, Kew, and was dedicated to the Right Hon. Earl Stanhope, President of the Medico-Botanical Society of London. It now numbers upwards of forty species, eight of which have been illustrated in the "Botanical Magazine," namely:—*S. insignis*, Frost (t. 2948–2949), *S. eburnea*, Lindl. (t. 3359), *S. tigrina*, Batem. (t. 4197), *S. ecornuta*, Lindl. (t. 4885), *S. Bucephalus*, Lindl. (t. 5278), *S. Wardii*, Lodd. (t. 5289), *S. oculata*, Lindl. (t. 5300), and *S. Haseloviana*, Reichb. f. (t. 7452). All are remarkable for great complexity in the structure of their flowers, and the present one is no exception, though in several respects it is so anomalous in character that it cannot be compared with any other, and may almost be said to constitute a distinct section of the genus. The flowers are solitary, borne on rather long pendulous scapes, and the middle portion of the lip—the mesochile—bears no approach to anything hitherto known.

March 1st, 1900.

S. Rodigasiana is a native of New Grenada, and was discovered in the State of Antioquia, in 1896, by Mr. Florent Claes, of Brussels, and first flowered in the celebrated collection of Sir Trevor Lawrence, Bart., at Burford, Dorking, in June, 1898, from which plant the present illustration was prepared about a year later.

As regards culture it agrees with other species of the genus in its requirements.

Descr.—*Pseudobulbs* ovoid, monophyllous, one to one and a half inches long, light green. *Leaves* shortly petiolate, lanceolate, acuminate, eight to ten inches long, bright green above, paler beneath, with three prominent nerves. *Scape* pendulous, about nine inches long, one-flowered; bract spathaceous, acute, membranous, an inch or more long; pedicel three inches long. *Flowers* nearly six inches in diameter. *Sepals* spreading, ovate-oblong, sub-obtuse, concave, three inches long, more or less marbled with dull purple below, and bearing large bright maroon blotches above. *Petals* triangular-lanceolate, attenuate above and recurved, three inches long, very pale green. *Lip* rather longer than the sepals, very fleshy; hypochile narrow at the base, dilated and concave above, basal half suffused with maroon purple, the rest similarly blotched on a paler ground; arms of mesochile suddenly dilated and hatchet-shaped, with the front angle prolonged into an acuminate bristle, the other acute; spotted with dull purple on a pale ground; epichile delicately articulated, triangular, elongate, obtuse, channelled above, dilated and saccate at the base, spotted with dull purple on a paler ground. *Column* as long as the lip, curved, winged from the middle upwards, and extending into a pair of curved oblong teeth at the apex, coloured like the lip; rostellum extending in a pair of diverging bristles, about half an inch long.—*R. A. Rolfe.*

Fig. 1, epichile of lip; 2, column; 3, anther; 4 and 5, pollinia:—*All enlarged.*

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Tab. 7703.

MATTHIOLA sinuata, *var.* oyensis.

Native of Western France.

Nat. Ord. Cruciferæ.—Tribe Arabideæ.

Genus Matthiola, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 67.)

Matthiola *sinuata*, var. *oyensis*; herba annua vel biennis, ramosa, circiter sesquipedalis, sublignosa, viridis undique glandulis stipitatis sparsis vestita, nec incano-tomentosa, foliis caulinis oblongo-lanceolatis linearilanceolatis vel superioribus linearibus maximis 4–5 poll. longis paucilobulatis sinuatisque vel integris obtusis deorsum in petiolum attenuatis, floribus albis $1\frac{1}{4}$–$1\frac{1}{2}$ poll. diametro odorem gratum emittentibus, sepalis basi inæqualibus anguste oblongis obtusissimis, petalorum laminis cuneato-oblongis sursum dilatatis sinuatis apice emarginatis vel bilobulatis, siliqua angusta recta 2–3 poll. longa, seminibus ovalibus valde compressis pallide brunneis ala angusta scariosa cinctis.

M. sinuata, *Br. in Ait. Hort. Kew.* ed. 2, vol. iv. p. 120, var. *foliis glabris, grandiflora, Lloyd, ex Nym. Consp. Fl. Europ. Suppl.* 2, p. 19.

M. oyensis, *Ménier et Viaud in Bull. Soc. Bot. France*, vol. xxiv. (1877), p. 203.

M. sinuata, *var.* oyensis, *Rouy et Foucaud, Fl. de France*, vol. i. p. 193.

This fragrant annual or biennial Stock has such a different appearance from typical *M. sinuata*, that one would at first sight pronounce it a distinct species, and it was described as such by Messrs. Ménier and Viaud-Grand-Marais, in the publication cited above, in 1877. Subsequent writers have taken a different and probably correct view of its status, and there is little doubt that it is a white-flowered variety of *M. sinuata*, differing from the typical or ordinary condition in the total absence of a dense, greyish tomentum. Several other species of plants exhibit the peculiarity of densely hairy and glabrous individuals growing intermixed. *Borrichia arborescens*, and *B. frutescens*, also seacoast plants (Compositæ), inhabiting the West Indies, Florida, and Bermuda, are among the most remarkable instances. Usually their leaves are clothed all over with hairs or a dense, soft down; but side by side with plants thus clothed with hairs others occur, having perfectly glabrous, glossy foliage. Another species of *Matthiola*—*M. incana*, Br.—is represented by a variety analogous to the one under consideration. At least, that is the view taken by

botanists who, like Caruel (in *Parl. Fl. Ital.* vol. ix. p. 795), regard *M. glabra*, DC. (*M. glabrata*, DC.), as a variety of *M. incana*, Br., the parent of the Brompton and other races of garden Stocks.

M. sinuata, var. *oyensis*, is a native of the Ile d'Yeu (*latine Insula Oya*), off the coast of La Vendée, where it grows associated with the typical form; thus strongly favouring the view of its affinities here adopted. Seeds of it were received at Kew from Messrs. Vilmorin-Andrieux & Co., of Paris, early in 1899, and the plants raised flowered in the open ground in June of the same year. Mr. R. I. Lynch also sent flowering specimens from the Cambridge Botanic Garden. It may be mentioned that the name *oyensis* has been corrupted in gardens to "*ohiensis*" and "*chinensis*." Both *M. incana* and *M. sinuata* are now found growing wild in Britain; the former on cliffs in the Isle of Wight, and the latter on the coasts of Devon, Cornwall, and Wales; but neither is regarded as indigenous or aboriginal.

Descr.—An annual or biennial, branching, green herb, one to two feet high, somewhat sparsely furnished with stalked glands on the stems, leaves, calyces and pods, but quite destitute of the dense, felt-like, greyish tomentum, characteristic of typical *M. sinuata*. *Leaves* alternate (of the stem only present in our specimens) oblong-lanceolate, linear-lanceolate, or the upper ones quite linear, furnished with two or three small lobes on each side, or quite entire, obtuse, narrowed downwards into a more or less distinct, though short petiole. *Flowers* white, very fragrant, especially in the evening, about an inch and a half in diameter, in stiff, terminal racemes. *Sepals* unequal at the base, narrowly oblong, very obtuse. *Petals* having a very narrow claw, and a wavy limb, dilated upwards, and notched or shallowly two-lobed at the top. *Pod* straight, two or three inches long, many-seeded. *Seeds* oval, much compressed, uniformly pale brown, and furnished with a narrow, white, membranous or scarious, marginal wing.—*W. Botting Hemsley.*

Fig. 1, a flower-bud; 2, portion of sepal; 3, androecium and gynæceum; 4, a stamen; 5, pistil:—*All enlarged.*

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Tab. 7704.

CEROPEGIA Woodii.

Native of Natal.

Nat. Ord. Asclepiadeæ.—Tribe Ceropegieæ.

Genus Ceropegia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 779.)

Ceropegia *Woodii*; herba tuberosa, glabra, ramis gracillimis decumbentibus vel pendentibus ad nodos sæpe tuberiferis, foliis petiolatis $\frac{1}{3}$–1 poll. longis et latis late cordato-ovatis vel orbiculari-reniformibus acutis vel obtusis carnosis supra albo-venosis, cymis axillaribus pedunculatis 2–3-floris, pedicellis 3–$3\frac{1}{2}$ lin. longis, sepalis $\frac{3}{4}$ lin. longis lineari-lanceolatis acutis, corollæ tubo 7–9 lin. longo basi globoso-inflato superne cylindrico ore leviter infundibuliformi rubro-purpureo lineato, lobis erectis apice cohærentibus angustis replicatis ciliatis atro-purpureis, coronæ exterioris breviter cupuliformis lobulis integris, coronæ interioris lobis linearibus vel lineari-lanceolatis apice recurvis acutis.

C. Woodii, *Schlechter in Engl. Bot. Jahrb.* vol. xviii., Beibl. No. 45, p. 34; and vol. xx., Beibl. No. 51, p. 49. *Gard. Chron.* 1897, vol. ii. pp. 357, 358, fig. 104.

This pretty species of *Ceropegia* was discovered by Mr. J. Medley Wood, the energetic Curator of Durban Botanic Gardens, in February, 1881, hanging from rocks on Groen Berg, Natal, at an altitude of about one thousand eight hundred feet. In 1894 Mr. Wood sent a living plant of it to Kew, and subsequently it has been introduced into other establishments. It seems to be nearest allied to *C. africana*, Br., and *C. Burkleyi*, Hook. f. (Bot. Mag. t. 6315), but is a much more slender and more elegant plant than either of these. It is admirably adapted for basket culture, as it produces a profusion of slender stems which hang gracefully down on all sides, and are well furnished with small variegated leaves. It flowers freely, and ripens fruit under cultivation. The accompanying figure was made from plants cultivated in the Botanic Garden at Cambridge, and in the Royal Gardens, Kew. It flowers under cultivation from February to November.

Descr.—Glabrous in all parts except the corolla. *Root-stock* tuberous, fleshy. *Stems* numerous, pendent, or trailing on the ground, slender, often producing globose tubers at the nodes. *Leaves* opposite, fleshy, one-third of

an inch to one inch long, and as much in breadth, on petioles two to six lines long, varying from broadly cordate-ovate to orbicular-reniform, acute or obtuse, apiculate, dark green, reticulate, variegated with white above, pale green beneath. *Cymes* axillary, pedunculate, two- or three-flowered. *Peduncle* two to five lines long. *Bracts* minute. *Pedicels* about a quarter of an inch long. *Sepals* three-quarters of a line long, linear-lanceolate, acute. *Corolla* slightly curved; tube seven to nine lines long, globosely inflated at the base, cylindric above, slightly dilated into a funnel-shaped mouth at the apex, streaked with purple; lobes three to three and a half lines long, erect, cohering at the tips, narrowly spathulate from a deltoid base, replicate, blackish-purple, ciliate with purple hairs. *Outer corona* shortly cupular, with five short, obtuse, pocket-like lobules, white. *Inner coronal-lobes* linear or linear-lanceolate, acute, connivent-erect, recurving at the apex, adnate at the base to the outer corona, white.—*N. E. Brown.*

Fig. 1, corolla; 2, corona; 3, one of the inner coronal-lobes attached to a stamen; 4, pollen-masses:—*All enlarged.*

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Tab. 7705.

CEREUS mojavensis.

Native of California.

Nat. Ord. Cactaceæ.—Tribe Echinocacteæ.

Genus Cereus, *Haw.*; *Benth. & Hook. f. Gen. Plant.* vol. i. p. 849.)

Cereus *mojavensis*; glaucescens, caulibus dense cæspitosis 2–6 poll. longis 1½–2 poll. diam. ovatis vel cylindricis 8–11-costatis, costis sinuato-tuberculatis, areolis 5–6 lin. distantibus orbicularibus junioribus tomentosis, aculeis radiantibus 7–8 inæqualibus intertextis centrali solitario omnibus subteretibus curvatis, floribus prope apices caulium enatis 2 poll. longis 1½ poll. diam. rubro-cinnabarinis, calycis tubi pulvillis 18–20 pauci-spinulosis, sepalis oblongis obtusis, petalis oblongo-obovatis obtusis, staminibus petalis fere æquantibus purpureis, stigmatibus 7–8 radiantibus viridibus.

C. mojavensis, *Engelm. & Bigel. in Pacif. Rail. Rep.* vol. iv. p. 33. *Engelm. in Proc. Amer. Acad.* vol. iii. p. 281; *& Bot. Works*, pp. 137, 158, 174. *Walp. Ann. Bot.* vol. v. p. 43. *Orcutt, Rev. Cact. United States*, p. 22.

C. Bigelovii, *Engelm. in Pacif. Rail. Rep.* vol. iv. pl. 4, f. 8; *& Bot. Works* (*Cact. of Whipple's Exped.*), pl. 4, f. 8.

C. mohavensis, *S. Wats. Bibl. Ind.* p. 398.

Echinocereus mojavensis, *Rümpl. in Först. Handb. Cact.* ed. 2, p. 803; *K. Schum. Monogr. Cact.* p. 297.

The *Cereus* here figured is one of the dwarf, tufted species, and is nearly allied to *C. Fendleri*, Engelm. (Bot. Mag. t. 6533), from which, as may be seen by a comparison of the plates, it differs entirely in its longer radiating spines, and smaller, differently coloured flowers. It is a native of the dry Mohave district between the Rio Colorado and Mohave Creek in California, where it was discovered in March, 1854, by Lieut. Whipple, whilst making the survey for the Pacific Railway, although, by some oversight, it is altogether omitted in S. Watson's *Botany of California*. The plant from which our figure was made was procured from Mr. Orcutt, of San Diego, California, in 1897, and flowered at Kew in June, 1899.

Descr.—Old plants densely tufted. *Stems* two to six inches high, one and a half to two inches in diam., ovate or cylindric, eight- to eleven-ribbed, light green, slightly glaucous. *Ribs* obtuse, sinuately tubercled. *Areoles* about

half an inch distant, orbicular, tomentose when young. *Spines* slightly bulbous at the base, the radial seven to eight unequal, more or less interwoven, three-quarters of an inch to one and a half inches long, the central one single, one and three-quarters of an inch to two inches long, all sub-terete, and more or less curved, pale greyish. *Flowers* produced near the apex of the stems, about two inches long, and one and a half inches in diam., bright reddish-scarlet. *Calyx-tube* bearing about eighteen to twenty small pulvilli, with two to six short, bristle-like, ascending spines to each. *Sepals* oblong, obtuse. *Petals* oblong-obovate, obtuse, entire, closely placed. *Stamens* nearly as long as the petals, purple-mauve. *Stigmas* seven to eight, radiating, green.—*N. E. Brown.*

Fig. 1, a tuft of spines, *of the natural size.*

M.S. del, J.N. Fitch lith.

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Tab. 7706.

KNIPHOFIA RUFA.

Native of Natal.

Nat. Ord. Liliaceæ.—Tribe Hemerocalleæ.

Genus Kniphofia, *Mœnch*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 775.)

Kniphofia *rufa*; acaulis, foliis linearibus paucis viridibus firmis dorso acute carinatis margine lævibus, pedunculo modice valido foliis æquilongo, racemo laxo, pedicellis brevissimis cernuis, bracteis ovato-lanceolatis pedicellis superantibus, floribus inferioribus citrinis superioribus rufo tinctis, perianthii cylindrici lobis orbicularibus patulis, staminibus demum exsertis.

K. rufa, *Hort. Leichtlin.*

This pretty little new species of *Kniphofia* is nearly allied to *K. laxiflora*, Kunth, from which it differs in its shorter, smooth-edged leaves, shorter perianth, and exserted stamens. It was introduced alive from Natal not long ago by Mr. Max Leichtlin, of Baden Baden, and was drawn from plants that he sent to Kew in June, 1899.

Descr.—Acaulescent. *Leaves* linear, few, firm, green, acutely keeled on the back, a foot or a foot and a half long, a third of an inch broad low down, tapering gradually to the point. *Peduncle* terete, moderately stout, as long as the leaves. *Raceme* lax, four to six inches long; pedicels very short, cernuous; bracts ovate-lanceolate, much longer than the pedicels, scarious, white, with a brown keel; lower flowers primrose-yellow; upper tinged with red. *Perianth* cylindrical, three-quarters of an inch long; lobes orbicular, spreading. *Stamens* and *style* finally exserted.—*J. G. Baker.*

Fig. 1, perianth with pedicel and bract; 2, front view of anther; 3, back view of anther; 4, pistil:—*All enlarged.*

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Tab. 7707.

VERBASCUM LONGIFOLIUM.

Native of S. Italy and the Balkan.

Nat. Ord. Scrophularineæ.—Tribe Verbasceæ.

Genus Verbascum, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 928.)

Verbascum (Thapsus) *longifolium*; elatum, robustum, bienne, albido- v. luteo-floccosum, foliis dense superpositis undulatis caulem simplicem velantibus oblongo-ovatis-lanceolatisve acuminatis infimis majoribus patulis 1½–2-pedalibus breviter petiolatis superioribus angustioribus suberectis sessilibus basi amplexicaulibus,* racemo inter folia sessili pedali spicæformi stricto cylindraceo 3½ poll. diam. obtuso, ramulis appressis v. raro elongatis, bracteis filiformibus, floribus dense congestis breviter pedicellatis, calycis stellatim tomentosi lobis lanceolatis acuminatis, corolla explanato-concava aurea pollicem lata, filamentis 3 brevioribus albido- v. violaceo-lanatis, antheris parvis connectivo villoso, 2 longioribus glaberrimis antheris multo majoribus lunatis ochraceis nudis, ovario hirtello basique styli stellatim tomentoso.

V. longifolium, *Tenore Fl. Neap. Prodr.* p. 16; *Syll. Pl. Vasc. Fl. Neap.* p. 110; *Fl. Napol.* vol. i. p. 89, t. 21. *Bertoloni Fl. Ital.* vol. ii. p. 595. *Benth. in DC. Prodr.* vol. x. p. 228. *Parlat. Fl. Ital.* vol. vi. p. 579. *Arcang. Compend. Fl. Ital.* p. 504. *Boiss. Fl. Orient.* vol. iv. p. 304. *Baldacci in Nuov. Giorn. Bot. Ital.* vi. (1899) 338.

V. pannosum, *Vis. ex Panc. in Mem. Ist. Venet.* vol. xii. (1866) p. 475. *Velenovsky, Flor. Bulg. Suppl.* i. 207.

V. montanum, tomentosum, &c., *Tilli, Cat. Pl. Hort. Pisan.* p. 171 (1723).

Verbascum longifolium is a stately species, remarkable, under the form here figured and described, for its extraordinarily abundant undulate sinuate foliage, and the massive columnar inflorescence of which the branches are closely appressed to the axis. This, however, may be only an extreme form, for the inflorescence is said by Boissier to be either simple or branched. The woolly hairs of the short filaments are both figured and described by Tenore as purple in the Italian plant, but by Bertoloni and Arcangeli as white; by Gussone as white below and purple above; Boissier says white, but his description probably applies to Macedonian or Servian specimens.

Its habitats recorded by Boissier are mountains near Bitolia, in Macedonia, at an elevation of three thousand five hundred to four thousand six hundred (French) feet, Servia, and Southern Italy. In the last named country

* Not "cordatis," as might be supposed from the figure.

Tenore gives the mountain pastures in the Abruzzi, Bentham gives near Rome, on the authority of Mauri, and there is a specimen so ticketed in the Kew Herbarium, but it is not the true plant. Its nearest ally is the common S. of Europe *V. phlomoides*, in which the leaves are crenulate, and the corolla-lobes are spreading, not, as in *longifolium*, forming a cup.

V. longifolium was raised in the Royal Gardens, Kew, from seed procured from Messrs. P. Barr & Sons, Thames Ditton, in 1898. As it flowered in the Herbaceous ground in July, 1899, it must be an annual, though described as a biennial by Boissier.

Descr.—Whole plant as here described, three or four feet high, clothed, except the corolla, with white or yellowish flocculent tomentum mixed with stellate hairs, forming a low conical mass of leaves crowned with a sceptre-like columnar inflorescence. *Leaves* innumerable, densely superposed, gradually diminishing upward in size and breadth; lower one and a half to two feet long, spreading, narrowly ovate, or oblong-lanceolate, acuminate, base narrowed into a short petiole, upper sessile, base amplexicaul, all quite entire, with strongly waved margins. *Inflorescence* sessile, a foot high, by three and a half inches in diameter, of innumerable short, stout appressed flowering branches; bracts filiform, green. *Flowers* shortly pedicelled. *Calyx* stellate-tomentose; lobes lanceolate, acuminate. *Corolla* cup-shaped, an inch broad, golden-yellow. Three short filaments and connectives of the small, short anthers, villous, with simple, clavellate white or violet hairs; two longer filaments quite glabrous, anthers twice as large, lunate, quite naked. *Ovary* hispid, base of style stellately hairy.—*J. D. H.*

Fig. 1, calyx with style and stigma; 2, stellate hairs of foliage, &c.; 3, base of corolla and stamens; 4 and 5, anthers of two long stamens; 6 and 7, short stamens; 8, hair from do.; 9, ovary and base of style:—*all enlarged*; 10, view of whole plant *reduced*.

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Tab. 7708.

DEUTZIA DISCOLOR, *var.* PURPURASCENS.

Native of Western China.

Nat. Ord. Saxifragaceæ.—Tribe Hydrangeæ.

Genus Deutzia, *Thunb.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 642.)

Deutzia *discolor*; frutex 6–7-pedalis, ramis teretibus, cortice brunneo, ramulis lateralibus præcipue floriferis, foliis breviter petiolatis 2–3½ poll. longis ovatis oblongisve acutis acuminatisve basi rotundatis subcordatis v. cuneatis subdiscoloribus supra læte viridibus glabris scaberulis v. sparse stellatim puberulis subtus pallidis glabris v. plus minus stellatim pubescentibus, petiolo ⅛–¼ poll. longo, nervis primariis 4–5 arcuatis, paniculis densi- vel laxi-floris, ramis ramulis pedicellisque sparse stellatim lepidotis, pedicellis brevibus v. elongatis, floribus ¾–1 poll. latis, calycis stellato-pubescentis segmentis oblongo-lanceolatis ⅙–⅓ poll. longis, petalis oblongis induplicatim valvatis dorso stellatim-puberulis marginibus late membranaceis glaberrimis, filamentis complanatis linearibus subæqualibus 5 longioribus petalis alternis furcatis cruribus apice crenulatis anthera sinu inserta, 5 brevioribus linearibus anthera facie inserta, disco explanato glabro v. stellatim puberulo, stylis 3 apicibus paullo incrassatis stigmatibus decurrentibus.

D. discolor, *Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1887) p. 275.

Var. *purpurascens;* panicula ramis ramulis pedicellis calycibusque rubro-purpureis, petalis dorso roseo-purpureis. *Franchet ex L. Henry in Le Jardin*, 1894, p. 147, fig. 64. *Gard. & Forest*, vol. vii. (1894) p. 284 & 287, fig. 48. *Gard. Chron.* 1899, vol. ii. p. 45, fig. 25.

The species of *Deutzia* are very difficult of discrimination, and have not hitherto been carefully studied. *D. discolor* was founded in 1887 by Mr. Hemsley on herbarium specimens collected in the Patung districts of the Hupeh province by Dr. Henry, who has more recently sent specimens of it from Szechuen. Its most distinctive character is that of the elongate calyx-lobes, in contrast to those organs in the Himalayan and Chinese *D. staminea*, Br., which is its nearest ally. The other characters assigned to it of discolorous leaves, densely stellately squamulose beneath, very long, slender pedicels, white flowers, and densely stellately lepidote crown of the ovary, are all most variable. Except in the purplish red coloration of the inflorescence and flowers I can find no differential characters for var. *purpurascens*, the figure given of

which in *Garden & Forest* differs widely from that here represented in the very lax inflorescence with very long pedicels, much larger flowers, and narrower petals. It was discovered in the Province of Yunnan, at an elevation of six thousand to seven thousand feet by the Abbé Delavay, who sent seeds in 1888 to Messrs. Vilmorin of Paris.

Plants of var. *purpurascens* were first received by the Royal Gardens, Kew, from the Jardin des Plantes, Paris, but the figure here given was taken from a specimen purchased in 1897 from Mr. J. Smith, of Newry, which flowered June, 1899.

Descr.—Var. *purpurascens*. A shrub six to seven feet high; branches covered with light brown bark. *Leaves* two to three and a half inches long, ovate or oblong, acute or acuminate, finely serrate, glabrous, scaberulous, or minutely stellately lepidote above, sparsely lepidote beneath, base rounded, sub-cordate or cuneate, nerves four to five pairs; petiole one-eighth to one-sixth inch long. *Inflorescence* of terminal rounded panicles terminating the lateral branchlets, peduncles and pedicels and calyces dark red-brown, sparsely lepidote. *Flowers* three-fourths to one inch in diameter. *Calyx-lobes* linear or oblong-lanceolate. *Petals* broadly ovate-oblong, dorsally thickened, stellately pubescent and red-purple, margins very broad, white, membranous. *Filaments* ten, linear, five opposite the petals shorter, simple, with the anthers on the inner face, five longer opposite the sepals forked, with the anther in the sinus. *Styles* three, with linear, thickened stigmatose tips.—*J. D. H.*

Fig. 1, calyx and styles; 2, stellate scale; 3, petal, dorsal view; 4, longer and 5, shorter stamens:—*All enlarged.*

M.S del, J.N.Fitch lith

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Tab. 7709.

ANTHOLYZA Schweinfurthii.

Native of Abyssinia.

Nat. Ord. Irideæ.—Tribe Ixieæ.

Genus Antholyza, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 710.)

Antholyza *Schweinfurthii*; cormo globoso mediocri, caule folioso, foliis 5–6 alternis pedalibus ensiformibus ad ¾ poll. latis acuminatis plicatis nervosis, spica laxiflora decurva, spathis exterioribus erectis angustis acuminatis scariosis convolutis inferioribus 1–2 pollicaribus rubro tinctis, superioribus brevioribus inflatis acutis, spathis interioribus tubo perianthii paulo longioribus ovato-lanceolatis, floribus spathas longe superantibus, perianthii 1½-pollicaris angusti decurvi coccinei basi aurei tubo brevi limbo dilatato subgibboso breviore et angustiore ore valde obliquo 6-fido, lobo dorsali ovato-oblongo obtuso galeato dimidium perianthii æquante, lobis 4 lateralibus dorsali terquaterve brevioribus lineari-oblongis subacutis, lobo antico minimo, staminibus styloque perianthio æquilongis, stylo gracili apice tricruri, cruribus recurvis, stigmatibus capitatis.

A. Schweinfurthii, *Baker in Gard. Chron.* 1894, vol. i. p. 588; in *Fl. Trop. Afr.* vol. vii. p. 375.

Antholyza is a wholly African genus, extending from the Cape of Good Hope to Abyssinia, but found only at considerable elevations in the tropical zone. *A. Schweinfurthii* is the most northern species hitherto discovered. It inhabits the mountains of Erytrea (Italian Abyssinia) at three thousand to six thousand five hundred feet elevation. Only three species (of nearly thirty described) have been, before the present, figured in this magazine, namely, *A. æthiopica*, L., t. 561, and its variety β, t. 1172; *A. quadrangularis*, Burm., t. 567 (*Gladiolus*); *A. Watsonioides*, Baker, Fl. Trop. Afr. vol. vii. p. 376 (*G. Watsonioides*, Baker, Bot. Mag. t. 6919); for *A. Meriana*, L., t. 418, is a *Watsonia*, and *A. Merianella*, L., t. 441, is a *Gladiolus*. *A. Schweinfurthii* flowered in a greenhouse in the Royal Gardens, Kew, in May, 1899. The bulbs were purchased from Messrs. Dammann & Co., of Naples, in 1884.

Descr.—*Corm* globose, an inch to an inch and a half in diameter. *Stem* about two feet high, slender, leafy. *Leaves* five or six, alternate, narrowly ensiform, acuminate,

about three-quarters of an inch broad, plicate, costate for about half their length, bright green. *Spike* lax-flowered, decurved when flowering in the upper half, four to five inches long, rhachis stout, dark green, lower flowers an inch or more apart. Outer spathes of lower flowers up to two inches long, narrowly lanceolate, acuminate, scarious, pale green clouded with red, of upper flowers shorter, oblong, acute, inflated; inner spathe lanceolate, about half as long as the perianth-tube. *Perianth* about one-third longer than the outer spathe, narrow, decurved, scarlet when exposed, yellow towards its base, tube short, cylindric, suddenly dilated into a gibbous, very unequally six-cleft tubular limb; dorsal lobe nearly as long as the rest of the perianth, ovate-oblong, concave, sub-acute; lateral lobes two on each side, erect, oblong-lanceolate, longest of each pair (those next the dorsal) about one-fourth the length of the dorsal, anticous lobe much the smallest. *Stamens* and style as long as the perianth; anthers linear-oblong, yellow. *Style* very slender, trifid at the apex, arms spreading, stigmas capitate.—*J. D. H.*

Fig. 1, flower with inner spathe; 2, anther; 3, ovary, style, and stigmas:—*All enlarged.*

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Tab. 7710.

CLEMATIS ORIENTALIS, *var.* TANGUTICA.

Native of Central Asia.

Nat. Ord. Ranunculaceæ.—Tribe Clematideæ.

Genus Ranunculus, *Linn.* (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 3.)

Clematis (Flammula) *orientalis*, var. *tangutica*; caule scandente, ramulis glabris v. sparse sericeo-pilosis, foliis longe petiolatis glauco-viridibus pinnatisectis, segmentis longe petiolulatis 2–2½ poll. longis linearilanceolatis acuminatis grosse serrato-dentatis incisisve basi sæpe lobatis, terminali simplici 3-lobo v. trisecto, pedunculis solitariis valde elongatis, ad 6 poll. longis erectis apice decurvis unifloris, floribus magnis aureis cernuis, sepalis fere bipollicaribus ovato-lanceolatis apicibus fere caudatis dorso alte tricostatis intus glabris marginibus late villosis, filamentis infra medium dilatatis ovariisque minutis villosis.

C. orientalis, *Linn.*, var. tangutica, *Maxim. Fl. Tangut.* p. 3.

Clematis orientalis is the most widely distributed of the known species of the genus, extending from the Cyclades and Caucasus Mts., eastward through North Persia to Affghanistan, and in the Western Himalaya as far as the confines of Nepal; and from Soongaria and the Pamir to the Altai Mountains, Manchuria, and North China. It varies greatly in the size of the flowers; and so much in the form of the sepals, that I suspect the Himalayan *C. graveolens*, Lindl. (tab. nostr. 4495), which is said to be distinguishable by its fetid odour, will prove to be a variety of it.

Living plants of var. *tangutica* were received by the Royal Gardens, Kew, from the Imperial Gardens of St. Petersburg in 1898, which flowered in the Arboretum in August, 1899.

Descr.—A glaucous-green scandent shrub, sparsely pilose with silky hairs. *Leaves* three to five inches long, long-petioled, pinnatisect, segments up to two and a half inches long, long-petiolulate, lanceolate, or linear-lanceolate, acuminate, coarsely serrate toothed or incised, base acute, often lobed in one or both sides, terminal segment entire,

three-lobed or three-partite; petiole one to two inches long, petiolules about half as long. *Flower* solitary, very large, cernuous, golden-yellow; peduncle six inches long, erect, arched at the tip. *Sepals* nearly two inches long, ovate-lanceolate, sub-caudately acuminate, tips recurved, dorsally strongly three-ribbed, glabrous within, margins broadly tomentose. *Filaments* dilated, and sparsely villous below the middle, anthers linear. *Ovary* minute, villous, style plumose.—*J. D. H.*

Fig. 1, stamen; 2, carpel:—*both enlarged.*

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Tab. 7711.

RENANTHERA Imschootiana.

Native of Assam.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Renanthera, *Lour.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 577.)

Renanthera *Imschootiana*; rhizomate ½–1-pedali crassitie pennæ anserinæ, ramis brevibus foliosis, foliis 2–4 poll. longis lineari-oblongis ad 1 poll. latis recurvis apice inæqualiter bilobis lobis rotundatis læte viridibus marginibus recurvis, pedunculo axillari ½–1-pedali vaginis paucis brevibus aucto, racemo multifloro basi tantum interdum ramoso, ramis pedicellis pollicaribus bracteis ovariisque rubris, bracteis parvis rotundatis concavis, sepalo postico ¾ poll. longo lineari-oblanceolato obtuso flavo, lateralibus unguiculatis 1½ poll. longis ovalibus obtusis supra cinnabarinis subtus ochraceo-rubris, petalis anguste spathulatis sepalo dorsali brevioribus flavis rubro maculatis, labello minuto 3-lobo aureo sanguineo maculato, lobo antico recurvo fere orbiculari crasso basi tritubercula to, lateralibus brevibus triangularibus obtusis, disco cristato, calcare brevi saccato obtuso, columna brevi truncata sanguinea, antheria hemispherica.

R. Imschootiana, *Rolfe in Kew Bulletin*, 1891, p. 200; *in Orchid Review*, vol. iii. (1895) p. 208; vol. iv. (1896) p. 229; in *Gard. Chron.* 1898, vol. i. pp. 41, 42, fig. 17.

R. Papilio, *King & Prain in Journ. As. Soc. Beng.* vol. lxiv. (1896) p. 328.

Mr. Rolfe, in describing this beautiful plant in the *Kew Bulletin*, informs us that it was sent to the Royal Gardens, Kew, in 1896, by Mr. A. Van Imschoot, of Ghent, who had received it from Messrs. F. Sander & Co., of St. Albans, as presumably a native of Cochin China. It has, however, since been found by Lieut. E. Lugard and others in Assam, which must be regarded as its native country. Plants of it were sent by the latter officer to the Royal Botanic Gardens, Calcutta, which were described by Sir G. King and Dr. Prain, under the name of *R. Papilio*. It is remarkable in the genus for its dwarf stature. The specimen here figured flowered in a tropical house in the Royal Gardens in June, 1899; the flowering lasting for about a month.

Descr.—*Stem* as much as a foot long, as thick as a goose-quill, tortuous, sending out stout roots and short leafing and flowering branches. *Leaves* close-set, distichous,

linear-oblong, about two to four inches long, and an inch in breadth, rather deeply unequally two-lobed at the tip, with an acute sinus, lobes rounded, margins recurved. *Peduncle* axillary, a foot long, slender, bearing a few short acute sheaths, and a many-fld. inclined raceme or panicle up to one ft. long; rachis of panicle, branches, pedicels and ovaries bright red; bracts small, rounded. *Dorsal sepal* linear-oblanceolate, obtuse, dull yellow, three-fourths of an inch long; lateral one and a half inches long, clawed, oval, obtuse, cinnabar-red above, beneath ochraceous. *Petals* rather shorter than the dorsal sepal, narrowly spathulate; yellow with blood-red spots. *Lip* minute, three-lobed; midlobe nearly orbicular, yellow, with scarlet blotches, two auricled at the base, and with three basal tubercles; side-lobes triangular, erect; disk complicately crested; spur a short, obtuse sac. *Column* scarlet, anther hemispheric.—*J. D. H.*

Fig. 1, lip and column; 2, anther; 3 and 4, pollinia: *all enlarged*; 5, view of plant, *reduced*.

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Tab. 7712.

ALOE abyssinica.

Native of Abyssinia.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 776.)

Aloe (Eualoe) *abyssinica*; caudice simplici 6 ped. alto ad 3 poll. diam. leviter cicatricato, foliis ad 20 apice caulis rosulatis quaquaversis 2–3 ped. longis ensiformibus sensim in apicem pollicarem cylindraceum obtusum attenuatis concavis basi 4–5 poll. latis crassitie ½ poll. medio ad 3 poll. latis læte viridibus supra basin versus maculatis, dentibus marginalibus ad ⅔ poll. distantibus majusculis deltoideis incurvis viridibus apicibus corneis brunneis, pedunculo foliis breviore ramoso, ramis erectis bracteis ¼ poll. longis subulatis membranaceis onustis, racemis ad 6 poll. longis 3–4 poll. diam. oblongis densifloris, bracteis floralibus rameis consimilibus, floribus pollicaribus nutantibus, pedicellis ½–1 poll. longis, perianthio anguste campanulato supra tubum integrum leviter constricto primulino (alabastro viridi infra medium cinnabarino), segmentis tubo duplo longioribus oblongo-lanceolatis apicibus intus aureis recurvis, genitalibus exsertis, antheris breviter oblongis ochraceis.

A. abyssinica, *Lam. Encycl.* vol. i. p. 86 (*excl. syn.*). *Roem. & Sch. Syst.* vol. vii. p. 695. *Salm-Dyck, Aloe*, sect. xviii. fig. 1. *Kunth, Enum. Pl.* vol. iv. p. 521. ?*A. Rich. Tent. Fl. Abyss.* vol. ii. p. 324. *Baker in Journ. Linn. Soc.* vol. xviii. (1881) p. 174; *in Fl Trop. Afr.* vol. vii. p. 467. *Engl. Hochgebirgsfl. Trop. Afr.* p. 164. *Schweinf. in Bull. Herb. Boiss.* vol. ii. app. II. pp. 66, 110.

A. vulgaris, *var.* abyssinica, *DC. Pl. Grasses*, sub t. 27; *Poir Encycl. Suppl.* vol. i. p. 294.

Aloe abyssinica is a plant of historic interest, having been brought to Europe by the celebrated Bruce, on his return from Abyssinia in 1771, and was no doubt presented by him to Louis XV. of France, for it was first described by Lamarck in 1783, from a specimen in the Jardin du Roi, given by that traveller. According to Baker, in the "Flora of Tropical Africa," it has a wide geographical range in N.E. tropical Africa, at elevations of three thousand two hundred to nine thousand four hundred feet, between Suakin and Berber in Nubia, to Erytrea and Abyssinia. In the same and in other works the stem is described as short, but in the plant here figured it is fully six feet high. The *A. abyssinica* of A. Richard, in his "Tentamen Floræ Abyssinicæ," is cited under it by most authors, but as the

perianth is described in that work as sexfid at the apex only, I have queried that citation.

There is no record of the source whence the specimen now in the Succulent House in the Royal Gardens, Kew, was procured. It has been there for many years, together with var. *Peacockii*, Baker (*A. elegans*, Todaro, Hort. Bot. Panorm. vol. ii. p. 25, t. 29), of which the leaves are eighteen to twenty-one inches long, and five to six broad near the base, and the flowers bright yellow; its stem is more slender, five feet high.

Descr.—*Stem* (of the specimen figured) six feet high, three inches in diameter, cylindric, faintly marked with transverse scars. *Leaves* about twenty, rosulate at the top of the stem, erect, spreading, or deflexed, two to three feet long, ensiform, gradually narrowed into a cylindric obtuse brown tip, nearly an inch long, four to five inches broad at the base, with the thickness of about half an inch, bright green, with oblong, pale, narrow blotches on the upper surface towards the base; marginal teeth about two-thirds of an inch apart, deltoid, incurved, green, tips cartilaginous, brown. *Peduncles* two or more, rather shorter than the leaves, erect, branched; branches loosely covered with subulate, pale, membranous bracts about a fourth of an inch long. *Raceme* up to six inches long, and three in diameter, very dense-fld., cylindric, bracts like those on the peduncle, but rather longer; pedicels longer than the bracts, erect, arching at the tip. *Flowers* pendulous, about an inch long, narrowly campanulate, slightly constricted above the short, entire tube, pale yellow (buds cinnabar-red below the middle, greenish-yellow above it); segments twice as long as the tube, narrowly oblong; tips recurved, golden-yellow within. *Stamens* and style exserted; anthers ochraceous, shortly oblong.—*J. D. H.*

Fig. 1, flower; 2 and 3, stamens; 4, pistil:—*All enlarged.*

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Tab. 7713.

COTYLEDON (Echeveria) Purpusii.

Native of California.

Nat. Ord. Crassulaceæ.

Genus Cotyledon, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 659.)

Cotyledon (Echeveria) *Purpusii*; acaulis, glaberrima, foliis dense rosulatis crasse carnosis ellipticis ovatisve acuminatis apicibus pungentibus leviter incurvis supra concavis dorso rotundatis glauco-viridibus præcipue apices versus rubro tinctis, exterioribus in fasciculo 1½–2-pollicaribus, interioribus dense congestis minoribus glaucis, pedunculo valido pallide rubro infra medium foliis paucis alternis radicalibus consimilibus sed multo minoribus ovatis acuminatis instructo, cyma 4–5 poll. lata dichotoma, ramis primariis divaricatis recurvis, ramulis pedicellisque roseis, floribus ¾ poll. longis suberectis, pedicellis ⅙–⅓ poll. longis basi bracteola parva carnosa instructis, calycis basi rotundati lobis ovatis obtusis, corollæ coccineæ laciniis lineari-lanceolatis apicibus acutis recurvis intus aureis in tubum basi integrum anguste conicum dispositis, staminibus 10, filamentis basi laciniarum insertis glaberrimis, antheris inclusis, ovario ovoideo, carpellis in stylum brevem 5-sulcatum attenuatis.

Echeveria Purpusii, *Schumann in Gartenfl.* 1896, p. 609, fig. 97 (*ic. xylog.*); *Gard. Chron.* 1896, vol. ii. p. 698, fig. 123.

Cotyledon Purpusii is a native of the Sierra Nevada of California, where it was discovered at an altitude of seven thousand to eight thousand feet on Mt. Whitney, by the gentleman to whom it is dedicated by the author in the "Gartenflora." Nine Californian species of the genus are given by S. Watson in the "Flora of California," with the descriptions of one of which, *C. nevadensis*, Wats., *C. Purpusii* so closely agrees, that it is possible that the latter is a synonym, especially as Sonora and the Yosemite Valley (the habitats for *nevadensis*) are, though much lower in elevation, in the same botanical region and group of mountains as Mt. Whitney. Referring to the Herbarium, I find it impossible from dried specimens to settle this point, which must be reserved for study when living specimens of *C. nevadensis* are available for comparison. Another very similar species is *Echeveria Desmetiana*, L. de Smet (*ex Morren in Belg. Hortic.*, 1874, p. 159; *Ill. Hort. sér.* 6, ii. p. 93, f. 13), which is recorded as a native of Mexico.

May 1st, 1900.

The specimen here figured of *C. Purpusii* was sent to me by Mr. R. J. Lynch, for figuring in this work from the Botanic Gardens of the University of Cambridge, where it flowered in the open air in June, 1899, having been subjected, without injury, to at least 12° below the freezing point in the previous winter.

Descr.—Quite glabrous. *Leaves* crowded in a sessile rosette, four inches in diameter, thickly fleshy, of a dull, rather pale, more or less glaucous-green colour, tinged with dull red towards the margins and tips, outer one and a half to two inches long, ovate or elliptic-ovate, acuminate, tip pungent, inner densely crowded, narrower, paler, more glaucous. *Peduncle* four inches high, ascending from the base of the rosette, stout, and, as well as the cyme-branches and pedicels, pale, rose-coloured, bearing below the middle scattered, ovate, acuminate leaves like the radical, of which the lower are an inch long, the upper gradually smaller. *Cyme* twice dichotomous, branches divaricate, primary two and a half inches long, spreading and recurved ; bracts small, obtuse, fleshy. *Flowers* erect, pedicelled, three-fourths of an inch long. *Sepals* short, broadly ovate, obtuse. *Corolla* conical-tubular ; tube very short; segments linear, scarlet, with spreading, acute, golden-yellow tips. *Stamens* included ; filaments subequal ; anthers linear-oblong. *Ovary* ovoid-oblong, narrowed into a short style with five minute stigmas.—*J. D. H.*

Fig. 1, portion of corolla and stamens ; 2, tip of pedicel and ovary :—*Both enlarged.*

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Tab. 7714.

CAMPANULA mirabilis.

Native of the Western Caucasus.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Campanula, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 561.)

Campanula (Medium) *mirabilis*; biennis ?, radice, fusiformi, caule robusto pyramidatim densissime ramoso, ramis patentibus foliosis multifloris, foliis glabris coriaceis inferioribus 6-pollicaribus obovato-spathulatis obtusis in petiolum alatum angustatis grosse inæqualiter crenato-serratis marginibus spinuloso-ciliolatis saturate viridibus, superioribus minoribus, ramis sessilibus ovato-cordatis, racemis confertis simplicibus v. ramosis pauci-multifloris, pedunculis 1–2-floris, pedicellis brevibus erectis bracteatis, bracteis minutis, calycis tubo turbinato, lobis erectis ovato-lanceolatis appendicibusque ovatis deflexis spinuloso-ciliolatis, corolla ampla late campanulata ad 2 poll. lata 5-loba pallide lilacina, lobis ovato-rotundatis obtusis pilis longis flaccidis ciliatis, filamentis filiformibus basi in laminam ½-orbicularem dense papilloso-ciliatam abrupte dilatatis, antheris elongatis liberis, stigmatibus 3 linearibus, capsulæ valvis basilaribus, seminibus anguste alatis.

C. mirabilis, *Alboff in Bull. Herb. Boiss.* vol. iii. (1895) p. 228, t. 3. *Gartenfl.* 1898, vol. xlvii. p. 192, fig. 57. *Gard. Chron.* 1895, vol. ii. p. 616; 1898, vol. ii. p. 33, fig. 10, p. 108; 1899, vol. ii. p. 275, figs. 92, 93. *Correvon in Rev. Hortic.* 1895, p. 677.

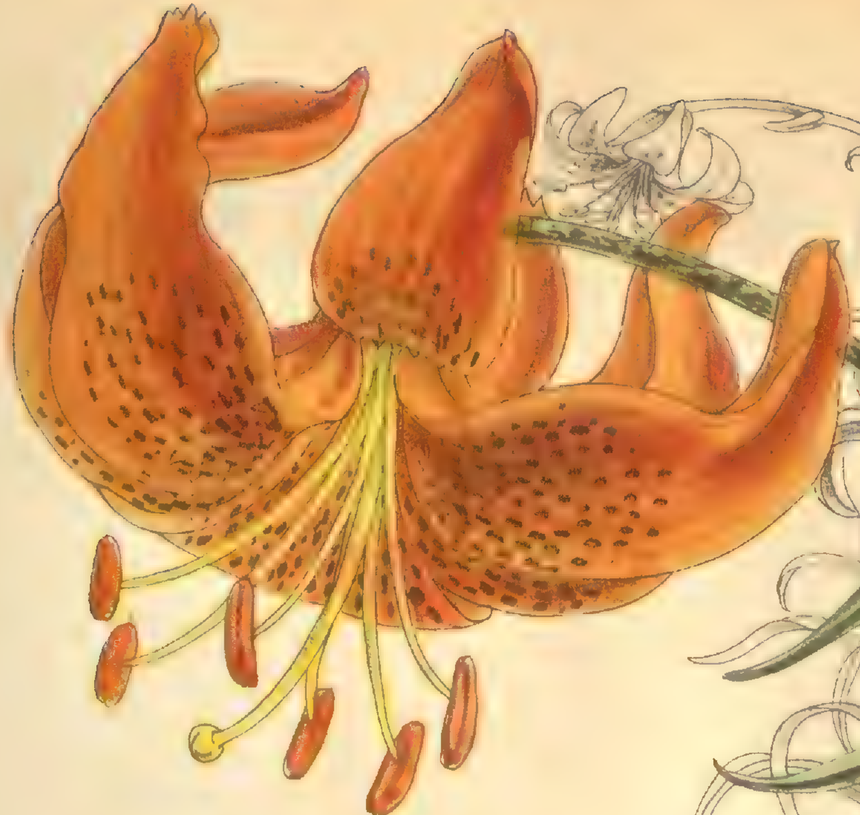
The very remarkable *Campanula* here figured was discovered by Mr. N. Alboff on limestone rocks in the Western Caucasus. The precise habitat which its discoverer gives for it is Arbika-Akhegoesh, in the province of Abkasia, at an elevation of two thousand one hundred feet. Though belonging to the same sub-division of the genus in Boissier's arrangement of the Oriental species to which *C. alliariæfolia*, Willd. (*macrophylla*, Sims, Bot. Mag. tab. 912), and *C. collina*, Bieb. (t. 927) both Caucasian species belong, it differs from them, and all others of the genus, in the singular, rather low conical form of the whole plant, its dense ramification, and the profusion of large flowers which almost hide the stem, branches, and leaves.

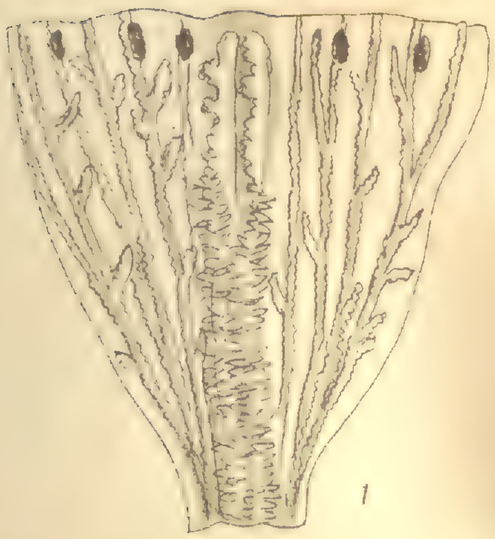
The Royal Gardens, Kew, are indebted to their old correspondent, the distinguished horticulturist, Mr. Max Leichtlin, of Baden Baden, for the plant of *C. mirabilis* here figured, which flowered, when two years old, under a

sunny wall in the open air. It has hence proved to be a biennial under cultivation, though said to be annual by its discoverer.

Descr.—Whole plant forming a low, broad cone of crowded branches, leaves, and flowers, a foot or more in diameter at the base. *Root* fusiform. *Lower leaves* four to six inches long, spathulately obovate, obtuse, narrowed into a broad winged petiole, irregularly coarsely crenate-toothed, glabrous, except the minutely spinulosely ciliate margins; upper leaves one to two inches long, sessile, ovate-cordate, crenate. *Flowers* two or more, erect, shortly stoutly pedicelled on the short spreading branches. *Calyx-tube* turbinate; lobes lanceolate, half an inch long, and together with the deflexed, ovate, acute appendages spinulosely ciliate. *Corolla* broadly campanulate, two inches broad across the mouth, pale lilac; lobes orbicular-ovate, margins and back sparsely ciliate with long hairs. *Filaments* slender, suddenly dilated at the base into a very broad, papillosely ciliate lamina; anthers narrowly linear, free. *Stigmas* three, linear, recurved.—*J. D. H.*

Fig. 1, portion of leaf, showing the spinulose margin; 2, stamen:—*Both enlarged.*





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Tab. 7715.

LILIUM sutchuense.

Native of China.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 816.)

Lilium (Martagon) *sutchuense*; bulbo mediocri, squamis appressis, caule 1½–2 ped. alto erecto gracili folioso luride viridi rufo-brunneo marmorato plurifloro basi nudo, foliis numerosis sparsis 3–5-pollicaribus anguste linearibus acuminatis $\frac{1}{6}$–$\frac{1}{4}$ poll. latis patenti-recurvis superioribus gradatim brevioribus supra saturate viridibus medio canaliculatis subtus pallidioribus carinatis, axillis ebulbiferis, pedicellis robustis 3–4 poll. longis horizontalibus cauli concoloribus folio parvo recurvo medium versus instructis, floribus pendulis 3-poll. diam., perianthii flavo-miniati medio rubro punctati basi campanulati segmentis ovato-lanceolatis obtusis revolutis expansis 3-poll. longis dorso supra medium crasse carinatis intus versus basin multinerviis, nervis validis flexuosis spinulis carnosis obsitis, sulco nectarifero bilamellato lamellis superne rugulosis inferne fimbriatis, filamentis divergentibus aurantiacis, antheris perianthio fere concoloribus, stylo ovario lineari-oblongo triplo 4-plo longiore, stigmate parvo obscure trilobo.

L. sutchuense, *Franch. in Journ. de Botanique*, vol. vi. (1892) p. 318. *Mottet in Rev. Horticole*, vol. lxxi. (1899) p. 475, fig. 204.

L. tenuifolium, *Fisch.* var. punctatum, *Bur. & Franch. in Herb. Mus. Paris, ex Franch. l.c.*

Hong pee ho, *nom. Sin.*

The nearest and indeed very near ally of *Lilium sutchuense* is *L. tenuifolium*, Fisch., a native of Central Asia, from the Altai to Amur-land and N. China, which differs in its smaller size, slender stem, narrower leaves, unspotted perianth, and shorter style.

L. sutchuense was raised from seed sent by the Abbé Farges to Mr. Maurice Vilmorin, of Paris, from Eastern Szechuen, where it has also been collected by Prince Henri of Orleans. It is one of the twenty-four species of Chinese and Tibetan Lilies enumerated by Franchet in the "Journal de Botanique" (l.c. p. 304).

The plant here figured was received by the Royal Gardens, Kew, from Messrs. Vilmorin & Co. in 1897. It flowered in an open border in July, 1899.

Descr.—*Bulb* about an inch in diameter; scales narrow, fleshy, appressed. *Stem* a foot and a half to two feet

high, erect, slender, dark green mottled with brown, leafy except towards the base. *Leaves* many, scattered, decreasing upward in size, three to five inches long, by one-sixth to one-fourth of an inch broad, spreading and recurved, narrowly linear, acuminate, deep green above, channelled from the base to the middle, paler, and strongly keeled beneath, axils not bulbiferous. *Flowers* two to four, pendulous; pedicels long, stout, horizontal, three to four inches long, of the same colour as the stem, and carrying a short, revolute leaf about the middle. *Perianth* about three inches in diameter; segments three inches long, two-thirds to three-fourths of an inch broad about the middle, conniving in a short, campanulate tube, then spreading and revolute, bright orange-scarlet, with small black spots about the middle, oblong-lanceolate, obtuse, stoutly keeled dorsally for half their length, ventrally furnished below the middle with many flexuous, stout nerves bearing fleshy spinules; nectarial fossa linear, margins produced into fleshy ridges, which are crenulate in their upper part, and hairy in their lower. *Filaments* orange-yellow, diverging; anthers orange-yellow. *Stigmas* small, obscurely three-lobed.—*J. D. H.*

Fig. 1, base of perianth-segment, inner surface; 2, anther; 3, ovary; 4, top of style and stigma:—*All enlarged*; 5, *reduced* view of whole plant.

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M.S del, J.N Fitch lith

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Tab. 7716.

RUBUS reflexus.

Native of China.

Nat. Ord. Rosaceæ.—Tribe Rubeæ.

Genus Rubus, *Linn.*; *Benth. & Hook. f. Gen. Plant.* vol. i. p. 616.)

Rubus *reflexus*; eglandulosus, caule scandente, ramis robustis sparsim aculeatis unacum petiolis foliis subtus et inflorescentia cinnamomeo-villosis, aculeis compressis rectis v. uncinatis, foliis amplis 3–8 poll. longis simplicibus e basi cordato-orbicularibus ovatis v. oblongo-ovatis obtusis integris v. 3-5-lobatis, lobis latis terminali elongato ovato v. oblongo marginibus denticulatis, supra saturate viridibus nervis impressis, subtus valide 3-nerviis, nervis primariis viridibus nervulis prominulis reticulatis, petiolo robusto, stipulis pectinatis, racemis parvis axillaribus decurvis densifloris, bracteis serratis, floribus breviter pedicellatis $\frac{1}{2}$–$\frac{3}{4}$ poll. latis, calycis dense villosi lobis late ovatis grosse serratis intus sericeis fructu erectis, petalis parvis albis, staminibus brevibus, antheris minutis rufescentibus, stylis capillaribus filamentis multoties longioribus, fructu parvo globoso, receptaculo villoso, carpellis maturis rubris purpureis v. nigris, putamine rugoso.

R. reflexus, *Ker in Bot. Reg.* t. 461 (*non* R. rugosus, β. reflexus, *Wall. Cat.* sub n. 748). *DC. Prodr.* vol. ii. p. 566. *Hook. et Arn., Bot. Beech. Voy.* p. 184. *Benth. Fl. Hongk.* p. 104. *Seem. Bot. Voy. Herald*, p. 376. *Maxim. in Mel. Biol.* vol. viii. p. 378. *Kunze, Methodik*, p. 53. *Forbes & Hemsl. in Journ. Linn. Soc.* vol. xxiii. (1886-8) p. 236.

Rubus reflexus belongs to a group of tropical Asiatic Brambles that are extremely difficult to distinguish, of which *R. moluccanus*, L. (*R. moluccus latifolius*, Rumph. Herb. Amboin. vol. v. t. 47, f. 2) is the type. Bentham (Fl. Hongk. l.c.) regards it (*reflexus*) as the same as *R. rugosus*, Sm., a widely distributed species from the Himalayas to the Malayan Islands, in doing which he follows Wallich, who refers *reflexus* as a var. β. to *rugosus*. After some remarks on variation in the inflorescence and bracts of *R. rugosus*, Bentham concludes with, "if united the *R. rugosus*, that is the older name; unless indeed the whole be considered as varieties of the Linnean *R. moluccanus*." This last name is the one I adopted in the "Flora of British India" (ii. p. 330), where the most prominent differential characters of the varieties are indicated. It is impossible in this work to enter further into the subject than to point out that *R. reflexus* is perhaps the most

distinct form of the group, best distinguished by the elongated mid-lobe of the leaf, combined with the very much decurved axillary panicles and densely villous calyx. It is confined to China, where it was first collected by Sir G. Staunton at Kwang-tung during Lord Macartney's Embassy in 1816. Besides being common in Hong Kong it inhabits Lo-fan-Shan, Hainan, and the North river.

According to Ker (Bot. Reg. l.c.) *R. reflexus* was in cultivation in Lee's Nursery, Hammersmith, in 1820, in which year it flowered in Mr. Kent's of Clapton. The drawing here given is from a plant clothing a pillar twenty feet high, in the Mexican wing of the Temperate House of the Royal Gardens. It was received in 1886 from the Royal Botanic Garden of Calcutta. It flowers in August, but does not ripen fruit.

Descr.—A tall, stout climber; branches, petioles, leaves beneath, and inflorescence covered with a cinnamon-brown villous pubescence. *Prickles* few, scattered, straight or curved. *Leaves* three to eight inches long, broadly ovate or ovate-oblong from a cordate base, obtuse, entire or three to five-lobed, with the terminal lobe elongated, margins toothed, palmately three- to five-nerved at the base, nerves sunk above, very prominent beneath; stipules pectinate. *Flowers* one half to three-fourths of an inch broad, crowded in small, decurved panicles, very shortly pedicelled. *Bracts* and *sepals* toothed. *Petals* white or pink. *Styles* filiform, much longer than the stamens. *Fruit* small, globose, red-purple or black.—*J. D. H.*

Fig. 1, portion of stem and prickles; 2, the same with base of petiole and stipules; 3, flowers and bracts; 4, carpel:—*All enlarged.*

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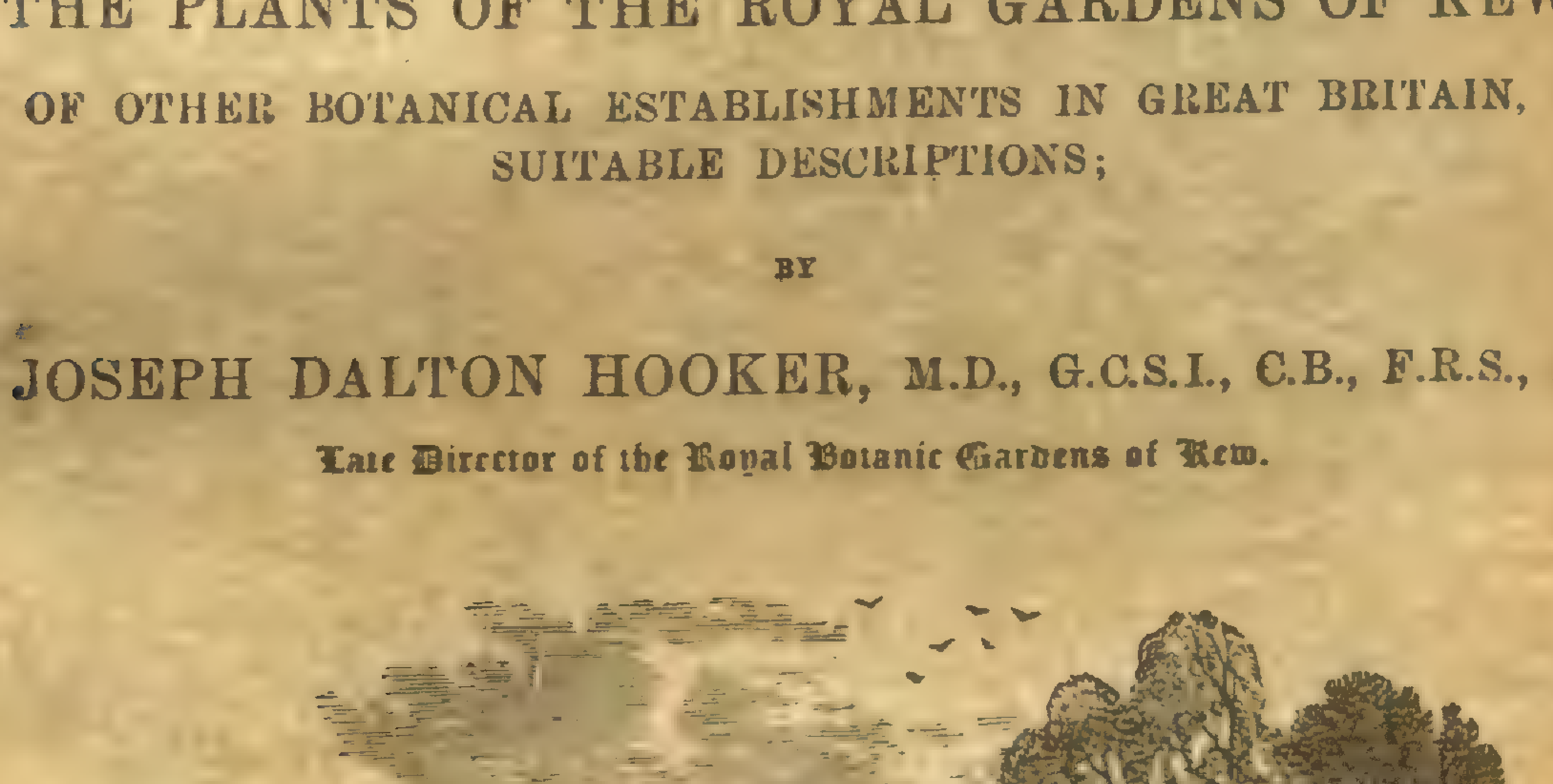

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Tab. 7717.

CONVOLVULUS macrostegius.

Native of Lower California.

Nat. Ord. Convolvulaceæ.—Tribe Convolvuleæ.

Genus Convolvulus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 874.)

Convolvulus *macrostegius;* suffrutescens, fere glaberrimus, caule gracili tereti fusco, ramulis annotinis elongatis volubilibus viridibus, foliis longe petiolatis late ovato- v. deltoideo-cordatis 4–5 poll. latis obtuse acutis v. acuminatis margine recurvis undulatis grosse crenatis v. basin versus fere lobulatis sinu lato v. angusto rotundato, basi palmatinerviis, nervis lateralibus paucis, nervulis laxe reticulatis, petiolis gracilibus 3–5-poll. longis, pedunculis axillaribus 6–10-pollicaribus 1–3-floris infra apicem bibracteatam pubescentibus, bracteis orbicularibus concavis apiculatis membranaceis $\frac{3}{4}$ poll. longis, sepalis $\frac{1}{2}$–$\frac{2}{3}$ poll. longis oblongis truncatis apice retusis costa valida in mucronem subulatum producta, corollæ albæ roseo tinctæ tubo late infundibulari, limbo 3-poll. diam. explanato, ovario strigilloso, stigmatibus linearibus teretibus obtusis.

C. macrostegius, *Greene in Bull. Calif. Acad.* vol. i. (1885) p. 208. *A. Gray Synopt. Fl. N. Am.* vol. ii. part i. p. 435.

C. occidentalis, *S. Wats. in Proc. Am. Acad.* vol. xi. (1876) pp. 89, 118; *Bot. Calif.* vol. i. p. 533 *partim* (*non A. Gray*).

There are very few species of *Convolvulus* indigenous in North America,—a dozen in all, including *C. sepium*, *L. and C. Soldanella*, L., which are common to the Old World. Except *C. arvensis*, L., no species native of Europe has been naturalized in N. America, and that very sparingly. Seven species are Californian, all of them, except *C. Soldanella*, confined to the west of the Rocky Mountains. Two of these, *C. occidentalis*, A. Gray, and *C. macrostegius*, Greene, are closely allied to *C. sepium*, differing from it in the shape of the leaves, and conspicuously in their very long petioles and pedicels. *C. macrostegius* is the larger and handsomer of the two; it is indeed one of the finest species of the genus, and being quite hardy, and flowering copiously for many weeks continuously, it has all the qualities requisite for becoming a great favourite. It appears to be a rare plant in California, the only hitherto recorded localities for it being San Clemente Island, one

of a group of islets off the coast of California, near Los Angeles, in lat. 33°-34° N., and Guadalupe Island, upwards of two hundred and fifty miles further south, and one hundred and fifty from the coast of Lower California.

A plant of *C. macrostegius* was, in 1896, presented by W. E. Gumbleton, Esq., of Belgrove, Queenstown, to the Royal Gardens, Kew, where, being planted against a wall in the Herbaceous ground, it flowers freely throughout the summer months.

Descr.—A slender, climbing, glabrous undershrub, with brown stem, and long, twining, pale green, annual branches. *Leaves* very long-petioled, four to five inches long and broad, ovate or deltoidly cordate, with a deep rounded sinus at the base, obtusely acute or acuminate, margins recurved, undulate and coarsely crenate, the basal lobes sometimes lobulate, light green above, paler beneath, palmatinerved at the base, lateral nerves three to five pairs, nervules loosely reticulate; petiole up to five inches long, very slender. *Peduncle* up to ten inches long, slender, terete, puberulous upward, bearing at the top a pair of large, hemispheric, membranous, green bracts, which enclose one to three sub-sessile flowers. *Calyx-segments* one-half to two-thirds of an inch long, narrowly oblong, truncate, retuse, cuspidate. *Corolla* white, tinged with pink; tube broadly funnel-shaped; limb two and a half to three inches in diameter. *Ovary* hispidly hairy. *Stigmas* linear, terete, obtuse.—*J. D. H.*

Fig. 1, calyx, style, and stigma s; 2 and 3, stamens; 4, ovary:—*All enlarged.*

M.S. del. J.N. Fitch lith

Vincent Brooks, Day & Son Lt.d Imp

Tab. 7718

MAMILLARIA VIVIPARA.

Native of the Rocky Mountains.

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Mamillaria, *Haw.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 847.)

Mamillaria (Coryphantha) *vivipara*; caule brevi depresso-globoso ovoideo v. ovoideo-oblongo simplici v. cæspitoso luride viridi, tuberculis ad ¾ poll. longis laxis oblongo-ovoideis teretibus v. leviter sulcatis, aculeis 12-36 gracilibus ½–¾ poll. longis rectis rigidis exterioribus patentissime radiantibus albis v. purpureo-fuscis, centralibus 3–12 robustioribus, floribus subterminalibus 1¼ poll. diam., sepalis linearibus oblanceolatisve fuscis fimbriatis, petalis roseis lineari-oblanceolatis acuminatis margine fimbriatis apice setuliferis, stigmatibus numerosis anguste lineraribus, baccis sublateralibus ovoideis viridibus, seminibus obovatis scrobiculatis fulvis.

M. vivipara, *Haw. Syn. Pl. Succ. Suppl.* p. 72. *DC. Prodr.* vol. iii. p. 459. *Torr. & Gr. Fl. N. Am.* vol. i. p. 554. *Leavenw. in Am. Journ. Sc.* ser. 1, vol. xlix. (1845) p. 130. *Engelm. in Gray, Pl. Fendl.* p. 49; *Pl. Lindh.* p. 197; *Pl. Upper Miss.* p. 192; *Syn. Cact. U. St.* p. 269; *Cact. Mex. Bound.* p. 15, t. 74, f. 3–5 (sem.); *in Trans. Acad. St. Louis*, vol. ii. p. 197; in *S. Wats. Pl. Wheeler*, p. 9; *in King's Rep.* vol. v. p. 115; *Hayd. Rep.* 1871, p. 484; *Simps. Rep.* p. 436. *Salm. Cact. Hort. Dyck.* p. 156. *Lab. Monogr. Cact.* p. 79. *Porter & Coult. Fl. Colorad.* p. 48; *Coulter, Man. Bot. Rocky Mts.* p. 109. *Först Handb. Cact.* Ed. ii. p. 302. *Hirscht. in Schum. Gesamtb. Kakt.* p. 547. *Bot. Works, Engelm.* p. 113, &c.

M. arizonica, *Engelm. in S. Wats. Pl. Wheeler*, p. 9.

M. missouriensis, *Scheer, in Seem. Bot. Voy. Herald*, p. 287 (*non Sweet*).

Cactus viviparus, *Nutt. Gen.* vol. i. p. 295. *Poir Encycl. Suppl.* vol. v. p. 587. *Torr. in Ann. Lyc. N. York*, vol. ii. (1828) p. 202.

I have some difficulty in reconciling the characters of the plant here figured with the descriptions of *M. vivipara* given by Engelmann in the numerous American railway and other reports in which he has alluded to it. I gather from these, however, that the species is a very variable one in size, form, and especially in the number and disposition of the spines, some or all of which are described by him as being white, others purple, or mottled with purple; all are dark coloured in the specimen here figured. Coulter, in the "Rocky Mountain Flora" also describes the spines as variously coloured; "five to eight reddish-brown, surrounded by fifteen to twenty greyish ones in a single series." Both authors say that the flowers are purple, whereas in our plant they are distinctly rose-red.

June 1st, 1900.

M. vivipara has a wide distribution on the plains and the eastern slopes of the Rocky Mountains, from the Missouri River in Dakota, to Texas, S. Utah, and Arizona. The specimen figured was purchased for the Royal Gardens, Kew, from Mr. D. M. Andrews, Nurseryman, of Boulder, California. It has proved to be so far hardy as to have, along with *M. Nuttallii*, Engelm., flowered in July, in the open air, between the buttresses of the Palm House, after having been exposed to the winter of 1898-99.

Descr.—(Of the specimen figured.) *Stem* four inches high, and three in diameter, solitary, ovoid, lurid green. *Tubercles* about an inch long, sub-erect, ovoid-oblong, terete, smooth. *Spines* twelve to thirty-six, one-half to three-quarters of an inch long, slender, stiff, outer radiating more or less horizontally, a few central, stouter, more erect, all purplish-brown. *Flowers* towards the top of the plant, several opening together, about an inch and a half in diameter. *Sepals* rather short, linear-oblong, or oblanceolate acute, pale brown, recurved, margins fimbriate. *Petals* much longer, narrowly oblanceolate, acuminate, with a minute, terminal bristle, margins fimbriate. *Anthers* yellow. *Stigmas* about thirteen, narrowly linear. —*J. D. H.*

Fig. 1, group of spines; 2, petal; 3, style and stigmas:—*All enlarged.*

7719.

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Tab. 7719.

CRYPTOCORYNE Griffithii.

Native of the Malayan Peninsula.

Nat. Ord. Aroideæ.—Tribe Arineæ.

Genus Cryptocoryne, *Fisch.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 963.)

Crytocoryne *Griffithii*; stoloniferum, foliis ad 3 poll. longis subcarnosis ovato- v. orbiculari-oblongis obtusis basi rotundatis v. cordatis marginibus subundulatis supra læte viridibus rubro-striolatis subtus pallidioribus creberrime striolatis, nervis utrinque costæ validæ ad 6–8 gracillimis arcuatis, petiolo 6–8-pollicari basi anguste vaginante, spathæ breviter pedunculatæ tubo 3–4-pollicari albo basi oblongo tumido dein cylindraceo ad $\frac{1}{8}$ poll. diam. superne sensim ampliato in limbum recurvum 1–$1\frac{1}{2}$ pollicarem lanceolatum caudato-acuminatum intus papillosum rufo-brunneum dilatato, inflorescentia $\frac{1}{2}$-pollicari, mascula gracile stipitata oblonga membrana operculiformi velata, appendice parvo clavato, in fl. fem. ovariis 8 connatis glandulosis pistillodia cingentibus, stigmatibus sessilibus reniformibus.

C. Griffithii, *Schott, Syn. Aroid.* p. 1; *Prodr. Syst. Aroid.* p. 14; *in Bonplandia*, 1857, p. 220. *Engler, in DC. Monogr. Phanerog.* vol. ii. p. 631. *N.E. Br. in Journ. Linn. Soc.* vol. xviii. (1880) p. 244. *Hook. f. Fl. Brit. Ind.* vol. vi. p. 493.

Cryptocoryne, sp., *Griff. Notul.* vol. iii. p. 139; *Ic. Pl. Asiat.* t. 173, fig. 3 (ovula).

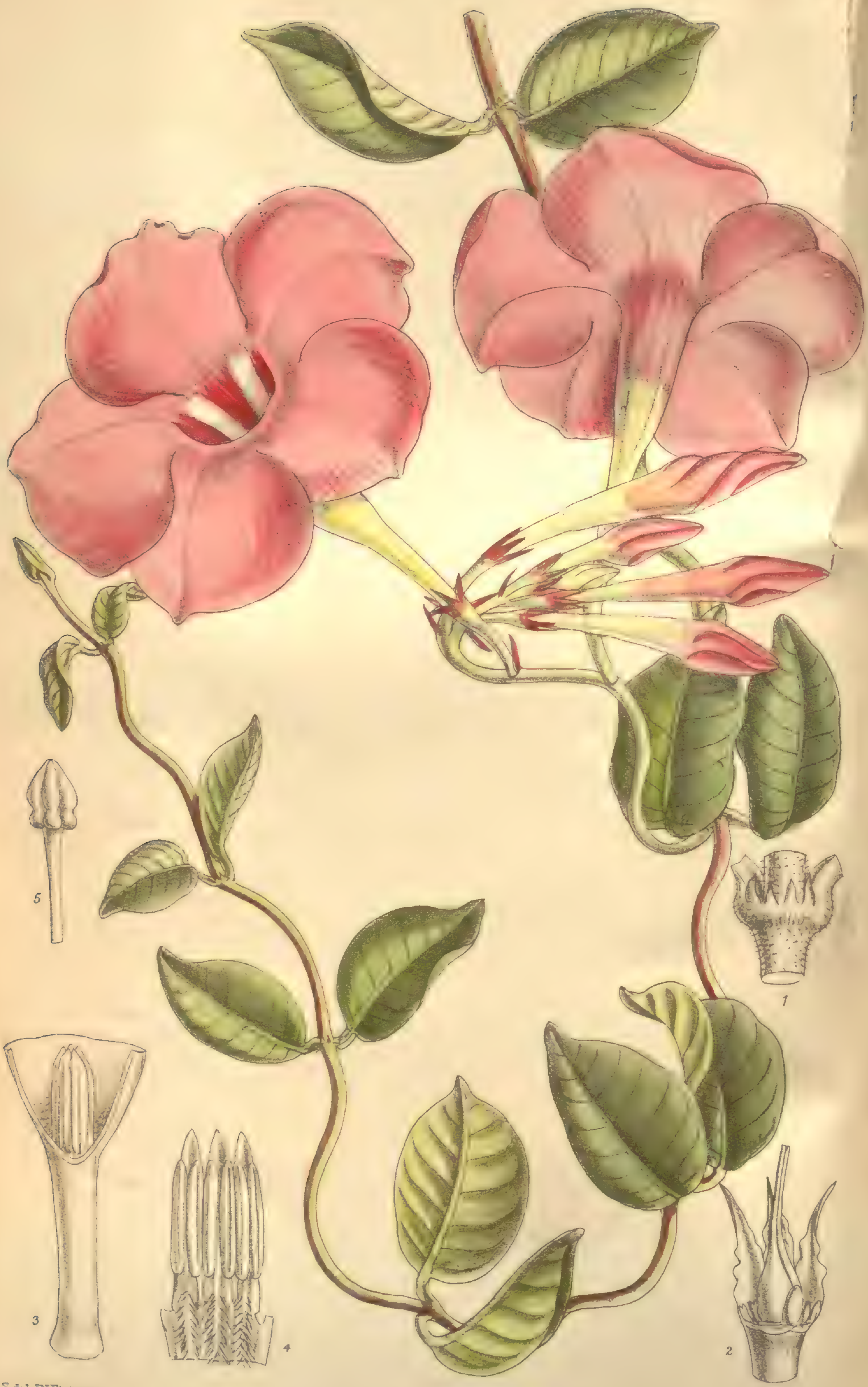
Though described by Griffith (without a specific name) as having only six ovaries, I think that the plant here figured is certainly that to which Schott gave the name *Griffithii*. The genus consists of six-and-twenty described species, all East Indian or Malayan; of which one alone has been previously figured in this work (*Arum spirale*, Retz., tab. 2220). It is remarkable for the curious hood in the interior of the tube of the spathe, which envelops the male inflorescence, and is, no doubt, concerned in the operation of pollinization. Mr. Motley, in a MS. description of a closely allied Bornean species (cited by Mr. Brown in Journ. Linn. Soc., l. c.), describes the tube of the spathe as depending for length on the depth of the water in which the plant grows, thus performing the office of the peduncle in other water-plants; and observes that after the pollen is shed the inflated portion of the tube generally contains half a dozen living insects, attracted probably by the slight carrion smell of the limb of the spathe.

June 1st, 1900.

C. Griffithii was discovered in fresh-water pools in Malacca by Dr. Griffith. In 1898 Mr. H. N. Ridley sent a plant of it, by favour of Mr. Glasgow, from the Botanical Gardens of Singapore to the Royal Gardens, Kew, where it flowered in a warm-water tank in September, 1899.

Descr.—*Stemless*; base emitting stout, simple roots and stolons. *Leaves* long-petioled, about three inches long, ovate, or orbicular-oblong, obtuse, rather fleshy, base rounded or cordate, dark green above, and striolate with minute wavy-red lines, which are more copious on the paler under-surface, margins waved; midrib stout; nerves six to eight pairs, very slender, arching; petiole six to eight inches long, greenish-brown, narrowly sheathing at the base. *Peduncle* short, stout, red-brown. *Spathe* with an oblong basal swelling about half an inch long, suddenly narrowed above it into a white membranous tube three inches long, which dilates upwards into a lanceolate caudate-acuminate recurved limb an inch and a half long, purple and papillose within. *Inflorescence* in the tumid base of the spathe; male infl. an oblong stipitate head of crowded vertical anthers, terminated by a minute appendage, and enclosed in a membranous calyptra which is adnate to the wall of the spathe; female infl. a whorl of about eight, confluent, sessile, glandular ovaries, with large reniform stigmas, surrounding many crowded pistillodes.—*J. D. H.*

Fig. 1, interior of base of spathe with inflorescences; 2, male infl.; 3 and 4, anthers; 5, fem. infl.; 6, vertical section of an ovary, with ovules:—*All enlarged*.



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Tab. 7720.

DIPLADENIA eximia.

Native of Brasil.

Nat. Ord. Apocynaceæ.—Tribe Echitideæ.

Genus Dipladenia, *A.DC.* (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 726.)

Dipladenia (Eudipladenia) *eximia*; caule gracili volubili roseo minute puberulo, foliis parvis 1–1½ poll. longis breviter petiolatis late ovatis ovalibus v. fere orbiculatis abrupte obtuse acuminatis v. cuspidatis papyraceis basi rotundatis glaberrimis supra læte viridibus subtus pallidis, nervis utrinque 8–10 divaricatis subtus prominulis, petiolis vix $\frac{1}{10}$ poll. longis, paribus basi glandulis interpetiolaribus erectis subulatis utrinque 4–5 connexis, cymis pseudaxillaribus longiuscule pedunculatis, pedunculo 1–2 poll. longo torto viridi, bracteis pedicellis brevioribus subulatis deciduis sanguineis, calycis segmentis parvis subulato-lanceolatis sanguineis intus basi glandulis subulatis instructis, corollæ tubo fere 2-pollicari infra medium cylindraceo dein anguste infundibulari intus medio infra staminum insertionem pilis deflexis onusto, limbi 2½–3 poll. diam. læte rosei lobis explanatis rotundatis obtuse apiculatis, staminibus medio tubo insertis, antheris linearibus, connectivo in laminam ovato-oblongam producto, disci glandula solitaria oblonga, ovariis glaberrimis, stigmate pentagono.

D. eximia, *Hemsl. in Gard. Chron.* 1893, vol ii. p. 120.

The beautiful plant here figured was imported by Messrs. F. Sander & Co., in 1889 or 1890, but from what country is rather uncertain. In answer to my request for information on this point, they promptly informed me that they believe it came from the *Lælia purpurata* country, with plants of that Orchid, of which the habitat is known to be the Province of Santa Catarina in South Brasil. It is a stove plant, flowering freely in the summer months.

Descr.—A very slender, twining, nearly glabrous climber. *Stem* flexuous, rose-red, minutely puberulous. *Leaves* in distant pairs, very shortly petioled, an inch to an inch and a half long, from broadly ovate to elliptic or nearly orbicular, abruptly obtusely cuspidate, quite glabrous, bright green above, pale beneath, base rounded; nerves six to eight pairs, widely spreading, together with the midrib prominent beneath; petioles with four to five interpetiolar, subulate, erect glands on each side of the stem. *Cymes* axillary, six- to eight-flowered; peduncle one to two inches

long, tortuous, green; bracts very small, subulate, bright red, shorter than the stout pedicels. *Calyx* small, segments erect, subulate-lanceolate, acuminate, bright red, furnished at the base within with about five subulate minute fleshy glands. *Corolla-tube* nearly two inches long, cylindric below the middle, dilated and narrowly funnel-shaped above it, furnished within below the middle with copious deflexed hairs; limb two and a half to three inches in diameter, bright rose-coloured; lobes orbicular, obtusely cuspidate. *Stamens* inserted at the top of the cylindric part of the corolla-tube; filaments very short, flat; anthers linear, connective produced in an oblong-ovate terminal claw. *Disk* a solitary oblong gland. *Ovary* glabrous, stigma five-angled—*J. D. H.*

Fig. 1, portion of stem, with bases of petioles and interpetiolar glands; 2, portion of calyx with the gland of the disk and two carpels; 3, portion of corolla-tube and stamens; 4, three stamens; 5, top of style and stigma:—*All enlarged.*

M.S.del, J.N.Fitch lith.

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Tab. 7721.

HELENIUM TENUIFOLIUM.

Native of the Eastern U. States.

Nat. Ord. Compositeæ.—Tribe Heleniеæ.

Genus Helenium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 413.)

Helenium (Euhelenium) *tenuifolium*; herba annua, erecta, fastigiatim ramosa, glaberrima, foliosa, multiflora, foliis alternis et ternatim fasciculatis sessilibus anguste linearibus 1½–2-pollicaribus vix ¹/₁₂ poll. latis acuminatis, pedunculis elongatis gracillimis, capitulis 1–1½ poll. diam., involucri bracteis oblongo-lanceolatis, receptaculo angusto tumido, fl. radii numerosis tubo brevi ligula cuneiformi 3-loba aurea deflexa basi dorso pubescente, fl. disci in capitulum globosum aureum congestis, corolla tubulosa breviter 5-loba pubescente, antheris linearibus inclusis connectivo anguiformi terminatis, achæniis obconicis hirsutis, pappi squamis ad 6 achænio æquilongis orbiculatis v. late ovatis seta rigida elongata terminatis.

H. tenuifolium, *Nutt. in Journ. Acad. Philad.* vol. vii. (1834) p. 66. *Hook. Comp. Bot. Mag.* vol. i. p. 98. *Torr & Gr. Fl. N. Am.* vol. ii. p. 385. *Chapman, Fl. S. U. States*, p. 239. *Meehan Nat. Fl. U. States*, vol. ii. p. 37, t. 10. *A. Gray, Synopt. Fl. N. Am.* i. 2, p. 347.

Helenium tenuifolium is described by Gray as a very common plant in river bottoms and on roadsides, from Arkansas to Mississippi, Florida, and Texas, being a naturalized weed throughout the Southern Atlantic States. A variety, *badium*, A. Gray, from Texas, has dull, purplish-brown disk-flowers. Under the name of *Sneezewort* it is reported to be poisonous to men and cattle, and to give a bitter taste to milk. Horses will not touch it unless pressed by hunger. It has no effect on sheep. It has been long cultivated in the Royal Gardens, Kew, where its profuse golden flowers renders it very conspicuous in autumn.

Descr.—An erect, slender, fastigiately branched, copiously flowering, leafy, glabrous annual; branches erect, sub-corymbosely fascicled. *Leaves* sub-erect and spreading, one and a half to two inches long, by about one-twelfth of an inch broad, sessile, usually fascicled in threes, very narrowly linear, acuminate, bright green. *Peduncles* terminal, very slender, erect, naked. *Heads* an inch to an inch and a half in diameter. *Involucral bracts* oblong-lanceolate. *Re-*

ceptacle narrow, tumid. *Ray-florets* twelve to fifteen, spreading and deflexed, golden-yellow; tube very short, limb cuneiform, three-lobed, dorsally hairy towards the base; style short, arms linear, recurved. *Disk-florets* forming a globose or hemispheric golden-yellow head; corolla tubular, shortly obtusely five-lobed, papillosely hairy; anthers included, linear, connective unguiform; style exserted, arms as in the ray-florets. *Achenes* of ray and disk-florets short, obconic, hirsute, crowned with five or six, broadly ovate or orbicular, erect pappus scales, each terminated by a rigid bristle as long as itself.—*J. D. H.*

Fig. 1, bract of involucre; 2, base of ray-floret; 3, disk-floret; 4, anthers; 5, style-branches; 6, achene; 7, scale of pappus:—*All enlarged.*

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Tab. 7722.

LILIUM Brownii, *var.* leucanthum.

Native of China.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Lilium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 816.)

Lilium (Eulirion) *Brownii*; bulbo globoso, squamis arcte adpressis oblongis carnosis albidis, caule 3–6-pedali robusto viridi folioso foliis (supremis subverticillatis exceptis) alternis confertis patenti-recurvis subæquilongis 3–5 poll. longis 1¼–1½ latis ovato-lanceolatis acuminatis 3–5-nerviis basi constrictis supra saturate viridibus subtus pallidis alte 3–5-costatis axillis bulbiferis supremis brevioribus et latioribus, floribus in axillis supremis paucis maximis pendulis, pedicellis robustis arcuatis, perianthii 5–7-phyllicaris segmentis infra medium in tubum cylindricum alte et late 6-costatum dein anguste infundibulare dispositis dorso brunneis apicibus dilatatis apice rotundatis revolutis 2–2½ poll. latis albis, nectarii marginibus papilloso-pubescentibus, filamentis robustis vix declinatis styloque robusto inferne papillosis, antheris ½–¾ poll. longis flavo-brunneis, stylo apice capitato costis stigmatosis decurrentibus.

L. Brownii, *Gheldolf, Cat.* (*cum descript.*) *ex Rev. Hortic. Ser. II.* vol. ii. (1843-44) p. 495. *F. & E. Brown ex Spae in Ann. Soc. Roy. d'Agric. et de Bot. Gand*, vol. i. (1845) p. 437, t. 41; *Mem. Lis*, p. 11. *Miellez in Fl. des Serres*, vol. i. (1845) p. 110, cum tab. col.

L. Browni, *Franch. in Morot, Journ. Bot. Paris*, vol. vi. (1892) p. 312. *Elwes, Monog. Lil.* t. viii. (*excl. syn. L. japonicum*).

L. japonicum, *Bury, Select. Hevandr. Pl.* t. 2.

L. japonici forma, *Baker in Journ. Linn. Soc.* vol. xiv. (1874) p. 230.

L. longiflorum, *Franch. Pl. David.* pars I. p. 307 (*non Thunb.*)

L. odorum, *Planch. in Fl. des Serres.* tt. 876-7.

L. japonicum, *var. Colchesteri, Van Houtte in Fl. des Serres*, t. 2193-4.

Var. leucanthum, *Baker in Gard. Chron.* 1894, pt. 2, p. 180. *The Garden*, 1895, p. 97, *cum ic.*; foliis latioribus, perianthii segmentis albidis dorso costa valida viridi percursis.

Though described as a distinct species nearly sixty years ago, it is only comparatively recently that *Lilium Brownii* has become well known to botanists and horticulturists. This is owing to its having been supposed to be a native of Japan, and hence confounded with *L. japonicum*, tab. 1591, and *L. longiflorum*, Thunb. According to Spae's monograph of *Lilium*, cited above, it was obtained from England by Mr. Miellez, of Liege, in 1837; and at about the same time the Messrs. Brown, of Windsor, in writing to Mr. Schurmans-Steckhoven, Director of the Botanical Gardens of Leyden, mention it as a new Lily, with flowers as large

as those of *L. japonicum*, but with a dark band on the back of the petals. That it was known at an earlier date in England is proved by its being figured in Bury's magnificent folio on Hexandrian plants, which was published in the years 1832-1834, where it is named *L. japonicum*, with Japan as its native country.

Var. *leucanthum* was first described by Mr. Baker in the *Gardener's Chronicle*, from a plant the bulb of which was sent to the Royal Gardens, Kew, by Dr. Henry in 1889, along with those of *L. Henryi* (tab. 7177) from Ichang, in the province of Hupeh. The specimen here figured was raised from seeds sent also by Dr. Henry, in 1897. It flowered in August, 1899.

Another variety of *L. Brownii*, called *viridulum*, is described by Mr. Baker in the *Gardener's Chronicle* (1885, vol. ii. p. 134) as having only a faint dash of claret-brown on the perianth-segments, and is recorded as a native of Japan.

Descr.—Var. *leucanthum. Bulb* globose, white, four inches in diameter; scales appressed, oblong, fleshy. *Stem* three to six feet high, robust, green, leafy from the base upwards. *Leaves* very many, crowded, spreading and recurved, sessile, alternate, and uniform in size, except the terminal, which are whorled, shorter and broader, ovate-lanceolate, three to five inches long by one and a quarter to one and a half broad, dark green, with about five deeply impressed parallel nerves above, which are strongly raised beneath, axils bulbilliferous; bulbils the size of a pea, dark brown and green. *Flowers* two or more in the axils of the uppermost whorled leaves, stoutly pedicelled; pedicels green, decurved, shorter than the flowers. *Perianth* five to seven inches long, very narrowly funnel-shaped; segments nearly white, each with a stout, broad, green dorsal midrib, dilating into a rounded revolute white limb, two to two and half a inches broad. *Nectary* linear, margins papillosely pubescent. *Filaments* very stout, sub-declinate, green; anthers half an inch long or more, linear-oblong, yellow-brown. *Style* very stout, green, tip capitate, six-lobed; stigmas decurrent on the lobes.—*J. D. H.*

Fig. 1. portion of stem with bulbils of *nat. size*; 2. anther; 3, head of style and stigmas, *both enlarged*; 4, greatly *reduced* view of whole plant.

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Tab. 7723.

HESPERALOE yuccæfolia.

Native of Texas.

Nat. Ord. Liliaceæ.—Tribe Dracæneæ.

Genus Hesperaloe, *Engelm.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 778.)

Hesperaloe *yuccæfolia*; glaberrima, caudice elongato interdum ramoso, foliis confertis erecto-patentibus et recurvis 3-pedalibus elongato-linearisubulatis crasse coriaceis læte viridibus supra concavis subtus rotundatis marginibus albis filamentosis, scapo 6-pedali roseo, inflorescentia pedali angusta paniculata rhachi ramis pedicellisque strictis roseis, floribus in fasciculos bracteatos secus rhachim dispositis, bracteis herbaceis late ovatis acuminatis viridibus marginibus late membranaceis albis v. roseis, bracteolis minutis, pedicellis ½–1-poll. longis, floribus suberectis cum pedicello articulatis, perianthio pollicari cylindraceo v. anguste campanulato rubro basi constricto, segmentis angustis apicibus patentibus obtusis exterioribus utrinque fere concoloribus interioribus intus aureis, filamentis basi segmentorum adnatis, antheris versatilibus linearibus basi subsagittatis, ovario oblongo in stylum crassiusculum attenuato, stigmate minuto 3-lobo.

H. yuccæfolia, *Engelm. in S. Wats. Bot. King's Exped.* p. 497; *Coll. Bot. Works*, p. 277. *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 250 (1879). *Baker in Journ. Linn. Soc.* vol. xviii. (1880) p. 231.

H. Engelmanni, *Krauskopf, ex Baker in Journ. Linn. Soc. l.c.*

Yucca? parviflora, *Torr. in Bot. Mex. Bound.* p 221. *Baker in Gard. Chron.* 1870, p. 923.

Aloe yuccæfolia, *A. Gray in Proc. Amer. Acad.* vol. vii. (1868) p. 390.

A very singular plant, described by Engelmann as resembling a *Yucca* in habit, in the filamentose margined leaves, and in the scape, pollen, and seeds; an *Aloe* in the perianth and pistil; and an *Agave* in the filaments being adnate at the base to the perianth-segment, and geniculate upwards. By which latter term I suppose that incurved at the apex is intended, a character which I cannot confirm on examination of living specimens.

Mr. Baker regards *H. Engelmanni*, Krauskopf, as a form with the style included, larger anthers, more slender flexuous branches of the panicle, and smaller bracts.

H. Engelmanni was discovered in Western Texas by Charles Wright, and is No. 1908 of his Herbarium. Seeds of it were received by the Royal Gardens, Kew, from its old correspondent, Mr. W. Thomson, of Ipswich, in 1888, plants from which were grown in an

unheated frame, along with Cape bulbs. One of them flowered for the first time in July, 1899, and from it the accompanying figure was made. It ripened a few seeds.

Descr.—*Stem* (not developed as yet in the Kew individual) two to four feet high, simple or branched. *Leaves* a yard long, by an inch broad towards the base, spreading and recurved, linear-subulate, acuminate, rigid, thickly coriaceous, concave ventrally, rounded dorsally, deep bright green, with white filiferous margins, the threads an inch long. *Scape* with panicle six feet high, stout, erect. *Panicle* narrow, branched at the base ; rhachis and branches stout, strict, terete, rose-purple. *Flowers* sub-erect, an inch long, fascicled in bracts along the rhachis and branches ; bracts up to an inch long, herbaceous, ovate, acuminate, green with broad, thin, white or red margins ; pedicels up to an inch long, rose-purple. *Perianth* bright rose-red, articulate on the pedicel by a short, contracted, solid base, cylindric, or narrowly campanulate; segments linear-oblong, obtuse ; tips spreading, outer concolorous, or very narrowly bordered with yellow, inner golden-yellow within. *Stamens* included, filaments with nearly straight, slender tips ; anthers linear-oblong, dorsifixed. *Ovary* ovoid, narrowed into the rather slender style; stigma minutely three-lobed.—*J. D. H.*

Fig. 1, front, and 2, dorsal view of portion of base of perianth and stamen ; 3, base of perianth and pistil; all *enlarged* :—4, *reduced* figure of the whole plant.

M.S. del. J.N. Fitch. lith.

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Tab. 7724.

DENDROBIUM Hodgkinsoni.

Native of New Guinea.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Stachyobium) *Hodgkinsoni*; pseudobulbis 5–10 poll. longis anguste clavatis canaliculatis apice 2–3-phyllis, foliis 4–7 poll. longis elliptico-lanceolatis subacutis subcoriaceis, scapo ad 4 poll. longo terminali erecto, racemo brevi 5–7-floro, pedicellis pollicaribus, bracteis $\frac{1}{4}$–$\frac{1}{3}$ poll. longis oblongis subacutis, floribus nutantibus subcampanulatis, sepalis petalisque ad 1–1$\frac{1}{6}$ poll. longis suberectis pallide viridibus triangulari-lanceolatis acuminatis dorso carinatis, labello sepalis paullo longiore 3-lobo pallide viridi radiis purpureis ornato, lobis lateralibus erectis rotundatis crenulatis, terminali ovato-cordato subacuto, disco callo magno albo nitido tricarinato basi utrinque unilobulato instructo, mento $\frac{1}{2}$-poll. longo late conico obtuso, columna latiuscula bicornuta, anthera depressa.

D. Hodgkinsoni, *Rolfe in Kew Bullet. ined.*

New Guinea, the native country of *Dendrobium Hodgkinsoni*, will probably prove to be the most productive of those hitherto unexplored areas of the globe which abound in Orchids. About a dozen species, many of them very imperfectly known, are contained in Miquel's "Fl. Ind. Bat.," published in 1859, to which must be added very many more recently discovered.

D. Hodgkinsoni is, according to Mr. Rolfe, who has kindly given me his unpublished description of it, allied to *D. atroviolaceum* (tab. 7371) also a New Guinea species, from which it differs, amongst other characters, in the elliptic-lanceolate leaves, unspotted flowers, acuminate sepals, lanceolate petals, and the large callus on the disk of the lip. It was introduced by Messrs. Sander & Co., of St. Albans, from whom the Royal Gardens, Kew, obtained the specimen here figured, which flowered in 1899.

Descr.—*Pseudobulbs* tufted, five to ten inches long, narrowly clavate, deeply channelled. *Leaves* two or three terminal on the pseudobulb, four to seven inches long, elliptic-lanceolate, sub-acute, coriaceous, bright green. *Scape* terminal, erect, about four inches long, terminated by a

short five- to seven-flowered raceme. *Bracts* one-fourth to one-third of an inch long, oblong, sub-acute. *Flowers* nodding, sub-campanulate ; mentum short, broadly conical, obtuse ; pedicels an inch long. *Sepals* and petals an inch and a quarter long, sub-erect, triangular-lanceolate, acuminate, dorsally keeled, pale green. *Lip* rather longer than the sepals, three-lobed, pale green, with broad, radiating, purple nerves ; side-lobes erect, broad, rounded, crenulate ; terminal ovate-cordate, sub-acute ; disk with a large prominent white, three-keeled callus. *Column* large and broad for the genus. *Anther* depressed on the broad top.—*J.D.H.*

Fig. 1, base of lip with callus; 2, column and mentum; 3, anthers; 4, pollinia :—*All enlarged.*

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Tab. 7725.

DIPLADENIA pastorum, *var.* tenuifolia.

Native of Brasil.

Nat. Ord. Apocynaceæ.—Tribe Echitideæ.

Genus Dipladenia, *A.DC.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 726.)

Dipladenia (Erythrochites) *pastorum*, var. *tenuifolia*; glabra, radice tuberoso, caulibus gracilibus flexuosis herbaceis, foliis anguste linearibus 2-3-pollicaribus $\frac{1}{10}$–$\frac{1}{6}$ poll. latis sessilibus subacutis 1-nerviis marginibus subrecurvis supra læte viridibus subtus pallidis, pedunculis axillaribus foliis brevioribus v. longioribus gracilibus 2–3-floris, calycis $\frac{1}{6}$ poll. longi segmentis subulato-lanceolatis basi intus glandulis subulatis instructis, corollæ hypocrateriformis tubo gracili pollicari apicem versus inflato ellipsoideo dein breviter constricto intus pubescente, ore annulari aureo, limbi rosei $1\frac{1}{2}$ poll. diam. plani lobis rhombeo-ovatis subacutis, antheris oblongis apiculatis, disci glandulis majusculis oblongis obtusis, folliculis linearibus 2-pollicaribus teretibus acuminatis erecto-patulis.

D. pastorum, tenuifolia & peduncularis, *A.DC. in DC. Prodr.* vol. viii. p. 482.

D. polymorpha, *var. a* tenuifolia, *Muell. Arg. in Mart. Fl. Bras.* vol. vi. pars. I. p. 121, t. 36.

Echites tenuifolia, *Mikan, Fl. et Faun. Bras. Fasc.* 3 (1820); *Stadelm. in Flora*, vol. xxiv. pars i. (1841) *Beibl.* p. 53.

E. peduncularis, *Stadelm. l.c.* p. 54.

E. pastorum, *Mart. ex Stadelm. l.c.* 52. *Mart. Syst. Mat. Med. Veg. Bras.* p. 90 (*et Ic. ined.* t. 63 *ex A.DC.*)

According to Mueller, in Martius' "Flora Brasiliensis," l.c. *Dipladenia polymorpha* is a very variable plant, of which he describes four forms, to which may possibly be added a plant badly figured in Flore des Serres, vol. ii. t. 74 (Aug. 1846) under the name of *D. vincæflora*. It is widely distributed in Brasil, from the littoral province of Bahia to that of San Paulo, and is found also in those of Minas Geraes and Goyaz. Martius describes it as having purgative properties, and being known to the Portuguese as Purga do pastor.

Tubers of var. *tenuifolia* were presented to the Royal Gardens, Kew, in 1896, by Mr. E. Hansen, Florist, of Mile End Road, London, which flowered in a stove in May, 1897, and again in Midsummer, 1898.

Descr.—Var. *tenuifolia*. A very slender, glabrous, tuberous-rooted herb, with twining, flexuous stem. *Leaves*

opposite, in distant pairs, two to three inches long, by one-tenth to one-sixth of an inch broad, very shortly petioled, sub-acute, one-nerved, margins slightly recurved, pale bright green. *Flowers* two or three, pedicelled on slender axillary peduncles as long as the leaves or longer. *Calyx* one-sixth of an inch long; segments erect, linear, acute, with subulate glands at the base within. *Corolla-tube* an inch long, very slender, with a small ellipsoid dilatation below the apex which is hairy within, and contains the stamens; limb an inch and a half in diameter, flat, rose-coloured, with a narrow, golden, five-cleft ring at the mouth, the lobes of which are emarginate; segments rhombic-ovate, sub-acute. *Anthers* sessile, linear-oblong, apiculate. *Disk* with two, erect, oblong, obtuse, or truncate fleshy glands. *Stigma* mitriform.—*J. D. H.*

Fig. 1, calyx, style and stigma; 2, ventricose upper part of corolla-tube laid open, showing the stamens; 3, tip of pedicel with calycine glands, disk-glands and ovary:—*All enlarged.*

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Tab. 7726.

ROBINIA NEO-MEXICANA.

Native of the Rocky Mountains.

Nat. Ord. Leguminosæ.—Tribe Galegeæ.

Genus Robinia, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 499.)

Robinia *neo-mexicana*; frutex v. arbuscula ramosa, ramulis hispidis, foliis 6–12-pollicaribus, foliolis multijugis ellipticis obtusis apiculatis primo supra albo-puberulis subtus tomentellis demum glaberrimis pallide viridibus, stipulis brevibus sericeis demum spinescentibus rectis v. recurvis, racemis breviter pedunculatis foliis brevioribus confertifloris, rhachi pedicellisque brevibus glanduloso-hispidis, bracteis lineari-oblongis caducis, calycis tubo hispido dentibus subulato-lanceolatis glanduloso ciliatis, legumine 3–4-pollicari anguste alata glanduloso-hispida, valvis setis rigidis erectis onustis.

R. neo-mexicana, *A. Gray, Pl. Thurb. in Mem. Am. Acad. N. Sc.* vol. v. (1855) p. 314. *Turcz. in Pacif. Rail. Rep.* vol. iv. p. 79; *Bot. Mex. Bound.* p. 53. *S. Wats. in King's Rep.* vol. v. p. 419. *Porter, Fl. Colorad.* p. 23. *Coulter, Man. Bot. Rocky Mts.* p. 59. *Rev. Hortic.* 1895, p. 112. *Gartenfl.* t. 1385. *Sargent, Sylva of N. Amer.* vol. iii. p. 43, t. 114.

Robinia neo-mexicana marks the western limit of the genus, which reaches the eastern slopes of the Rocky Mountains, along the chain of which it extends from Southern Colorado to New Mexico, Southern Utah, and Arizona, at elevations of four thousand to seven thousand feet. It is very closely allied to, and is, indeed, the western representative of *R. viscosa*, Vent. Zard. Cels. t. 4 (R. glutinosa, *Sims.* t. 560) a native of the mountains of Carolina; and which, according to Sargent, is one of the rarest trees of the United States. The only other species of the genus are the well-known Locust Tree, or False Acacia, *R. Pseudacacia*, Linn., and the Rose Acacia, *R. hispida*, L. (t. 311), both natives of the Eastern United States. I collected *R. neo-mexicana* in fruit, when visiting the Rocky Mountains, in company with Dr. Gray, near the town of La Veta, in Colorado. The tree, from which the specimen figured was taken, has been in cultivation in the Kew Arboretum for the last twelve years, flowering in June. It was received from the Botanic Gardens of Harvard, U.S.A., in 1887.

July 1st, 1900.

Descr.—A bush, or small tree, with spreading, hispid branches drooping at the tips. *Leaves* shortly petioled, six to twelve inches long, impari-pinnate, quite glabrous when mature; leaflets in fifteen to twenty-one pairs, about an inch long, elliptic, obtuse with a terminal mucro, pale green, young puberulous above and pubescent beneath, membranous, rhachis very slender, glabrous; stipules at length spinescent, a quarter to half an inch long, straight, or sub-recurved. *Racemes* shorter than the leaves, shortly peduncled; peduncles and rhachis hispid; flowers crowded, about an inch across; bracts lanceolate, membranous, caducous; pedicels short. *Calyx-tube* rounded at the base, hispid; lobes sub-equal, triangular-lanceolate, acute, ciliate with gland-tipped hairs. *Corolla* pale rose-pink. *Pod* three to four inches long, by half an inch broad, nearly straight, linear, obtuse, narrowly winged; valves thickly clothed with gland-tipped hairs and rigid bristles. *Seeds* oblong.—*J. D. H.*

Fig. 1, calyx laid open and ovary; 2, stamens and style, *both enlarged*; 3, pod of the natural size; 4, portion of the same *enlarged*.

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Tab. 7727.

CATTLEYA × Whitei.

Native of Bahia.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Cattleya, *Lindl.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 531.)

Cattleya × *Whitei*; pseudobulbis foliisque *C. labiatæ*, inflorescentia 2-flora, sepalis lineari-oblongis acutis v. acuminatis apicibus virescentibus, petalis latioribus oblongis obtusis undulatis decurvis, labelli laciniis lateralibus late triangulis columnam velantibus extus pallidis marginibus reflexis læte purpureis, fauce aurantiaca purpureo lineata, terminali reniformi rotundata dilatata lobulata denticulata et crispata.

C. × Whitei, *Reichb. f. in Gard. Chron.* 1882, vol. ii. p. 586. *Warner & Williams, Orchid. Album.* vol. iii. t. 115. *Gartenfl.* vol. xxxiii. p. 197, t. 1159. *Veitch, Man. Orchid.* Part ii. p. 87. *Rolfe in Orchid. Rev.* vol. vii. (1899) p. 292; *in Journ. Hort. Soc.* vol. xxiv. (1900) p. 192.

C. × Russellianum, *Mantin ex Rolfe in Journ. Hort. Soc.* vol. xxiv. p. 192.

So great has been the interest shown by Orchidologists in the natural hybrid here figured, that I have yielded to their wish that it should appear in the *Botanical Magazine*, as one of the few exceptions to the rule which excludes hybrids in favour of pure species, so long as these are pressing for illustration. Not that it is the only known wild hybrid Orchid, for Mr. Rolfe has given me a list of nineteen, all of which, including *C.* × *Whitei*, have had their mule origin proved, by having been artificially reproduced in Europe, and most of them in English gardens. These belong to eight genera, five American, *Cattleya*, *Laelia*, *Odontoglossum*, *Masdevallia* and *Anguloa*, and three Asiatic, *Phalænopsis*, *Calanthe*, and *Dendrobium*.

A special interest is attached to *C.* × *Whitei*, from its being one of the earliest of supposed wild hybrid *Cattleyas*. It was discovered in the Bahia province of Brasil by Mr. White, collector for Messrs. Hugh Low & Sons, with whom it flowered in 1882, when it was described by Reichenbach, who suggested its being a hybrid between *C. labiata* and *C. Schilleriana*. The only objection to this theory was, that the supposed parents were believed to inhabit localities some eight hundred miles apart. Some years later Mr. Rolfe, investigating the history of *C.* × *Whitei*,

ascertained from Mr. Boxall, another collector for Messrs. Low, that *C. Whitei* was a native of Bahia, where it was found growing on a tree in company with *C. Schilleriana*, a plant whose real habitat had not previously been recorded.

Up to the year 1899 the specimen described by Reichenbach was the only wild one known in Europe, but in that year a re-importation of specimens took place, amongst which was the fine one here figured, which flowered in the rich Orchid collection of Sir F. Wigan, Bart., D.L. of Clare Lawn, E. Sheen, who kindly sent it to Kew for illustration in this work.

For an instructive paper on natural and artificially produced hybrid Orchids and other plants, I may refer botanists to Mr. Rolfe's Essay on "Hybridization viewed from the standpoint of systematic Botany," published in the journal of the Royal Horticultural Society in April of this year.

It remains to give the diagnoses of *C.* × *Whitei* and of its parents.

C. Warneri, *T. Moore, ex Warner Sel. Orchid.* vol. i. t. 8. *Floral Mag.* 1871, t. 516. C. labiata, var. Warneri, *Veitch, Man. Orchid.* Part II. p. 27; flowers six to eight inches diam., sepals linear-lanceolate, petals ovate, three times broader than the sepals, lip obscurely 3-lobed, side lobes entire, midlobe deeply emarginate.

C. Schilleriana, *Reichb f. in Berlin Allgem. Gartenzeit.* 1857, p. 335. *Fl. des Serres*, t. 2286; *Veitch, Man. Orchid.* Pars ii. p. 45; flowers four to six inches in diam., sepals and petals similar oblong-lanceolate, lip ovate-oblong, deeply three-lobed, side lobes triangular, acute, midlobe reniform.

C. × Whitei; flowers six to eight inches in diam., sepals and petals most like *C. Warneri*, lip most like that of *C. Schilleriana*.—*J. D. H.*

Fig. 1, column; 2, anther; 3, pollinium and strap: —*All enlarged*; 4, whole plant greatly reduced.

M. Fitch lith.

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Tab. 7728.

ASPARAGUS ternifolius.

Native of Natal.

Nat. Ord. Liliaceæ.—Tribe Asparageæ.

Genus Asparagus, *Linn.* ; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 765.)

Asparagus (Asparagopsis) *ternifolius* ; alte scandens, caule volubili, gracile tereti sulcato, ramulis flexuosis patulis v. deflexis sulcatis angulatis angulis rugulosis, spinis $\frac{1}{6}$–$\frac{1}{4}$ poll. longis pungentibus, cladodiis 3–8-natis linearibus v. anguste lineari-lanceolatis rectis v. falcatis $\frac{3}{4}$–1 poll. longis $\frac{1}{12}$–$\frac{1}{8}$ poll. latis acutis v. acuminatis planis, racemis solitariis v. 1–3-natis 1–2 poll. longis fere ad basin multifloris, rhachi stricto 6-gono angulis rugulosis apice nudo v. cladodiis instructo, pedicellis $\frac{1}{6}$–$\frac{1}{4}$ poll. longis medio versus articulatis, bracteis parvis lanceolatis, perianthio ad $\frac{1}{4}$ poll. diam. segmentis patenti-recurvis obovato-oblongis obtusis, filamentis perianthio ad $\frac{1}{2}$ brevioribus, antheris majusculis oblongis aurantiacis, ovario ad 12-ovulato.

A. æthiopicus, *Linn. var.* ternifolius, *Baker in Saunders, Refug. Bot.* t. 261. *Gard. Chron.* 1872, p. 1588, fig. 338.

A. falcatus, *Baker in Journ. Linn. Soc.* vol. xiv. (1875) p. 626 ; in *Flor. Trop. Afr.* vol. vii. p. 435 (*non Linn.*)

The species of *Asparagus*, of which one hundred and forty are enumerated in the *Index Kewensis*, are often very difficult of discrimination ; that which I here describe as *A. ternifolius*, was regarded by Mr. Baker first as a variety (*ternifolius*) of *A. æthiopicus*, Linn., from which it differs in the larger broad cladodes, angular rhachis of the raceme, larger flowers, shorter filaments, and oblong anthers, and subsequently as the same as *A. falcatus*, Linn., of Ceylon, which has much fewer and smaller flowers in the raceme, the rhachis of which is very short, and quite smooth, its pedicels are jointed far below the middle, its bracts are cymbiform, its filaments are nearly as long as the perianth-segments, and the anthers smaller and globose.

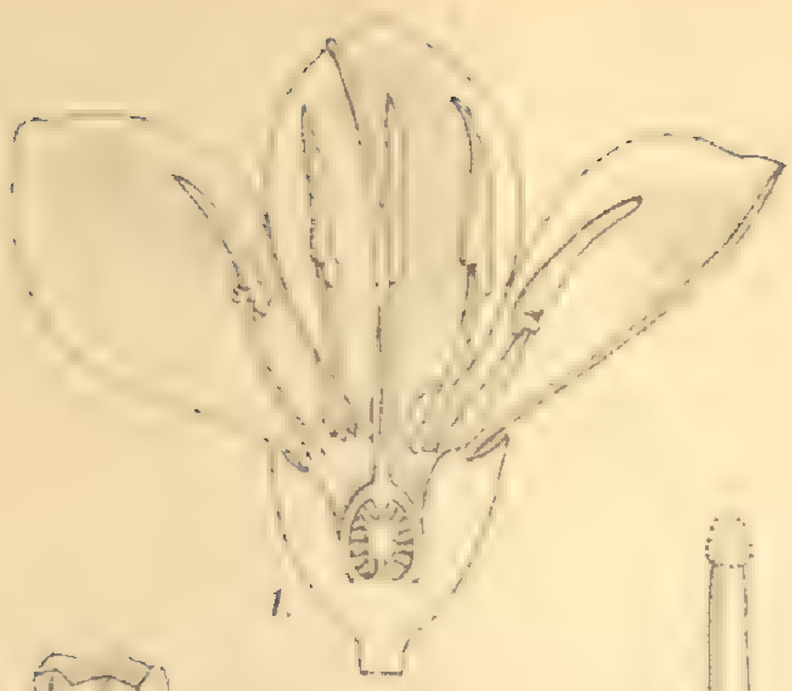
A. ternifolius was first described from specimens that flowered in the late Mr. Wilson Saunders' rich collection of Cape plants at Reigate, the seeds of which were sent from Natal by Thomas Cooper (Mr. Saunders' collector). The only native specimen of it which I have seen is in

the Kew Herbarium, collected by Mr. J. M. Wood, A.L.S., Curator of the Durban Botanic Garden, ticketed as found on Durban Flats in 1887. A closely allied species, also referred to *A. falcatus* by Mr. Baker, but I think differing from that plant, though more resembling that plant, has been sent by several collectors from Natal.

A. ternifolius has been in cultivation in the Succulent House of the Royal Gardens for a long period, and was, no doubt, procured from Wilson Saunders, F.R.S., about the time of its publication in the "Refugium" (1871). It flowers in August, but has not fruited at Kew.

Descr.—A slender, twining shrub, with a flexuous, smooth, woody stem, long, spreading or drooping, sulcate branches and branchlets, which are angular towards the tips, with minutely roughened angles. *Spines* short, stout, usually slightly recurved, pungent. *Cladodes* often in threes towards the tips of the branches, but up to eight occur lower down on the plant, linear or linear-lanceolate, acute or acuminate, variable in length and breadth, three-fourths to one inch long, by one-sixth to one-eighth of an inch broad, flat, bright green. *Racemes* one to two inches long, solitary, binate, or ternate, many- and rather dense-fld., rhachis striate, rather rigid, six-angled, with the angles roughened by prominent cells; pedicels one-sixth to one-fourth of an inch long, jointed about the middle; bracts lanceolate, one-nerved. *Flowers* about a fourth of an inch broad, faintly odorous; perianth-segments ob-ovate-oblong, obtuse, spreading, and recurved, white. *Filaments* about half as long as the perianth-segments; anthers oblong, orange-yellow.—*J. D. H.*

Fig. 1, portion of stem and spines; 2, portion of rhachis of raceme; 3, flower and bract; 4, bract; 5, perianth-segment and stamen; 6, ovary:—*All enlarged.*



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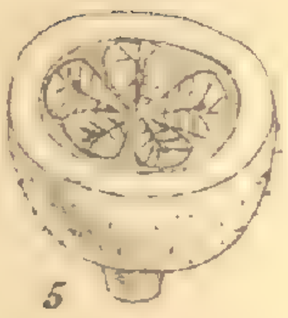

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Tab. 7729.

PHÆONEURON Moloneyi.

Native of Lagos.

Nat. Ord. Melastomaceæ.—Tribe Dissochæteæ.

Genus Phæoneuron, (*Gilg in Engl. & Prantl Natürl. Pflanzfam. Nachtr.* p. 267.)

Phæoneuron *Moloneyi*; herba caule apicem versus quadrangulo et purpureo-furfuraceo, inferne terete et glabrato, foliis ovatis vel ovato-ellipticis subacuminatis basi rotundatis vel subcordatis repando-serrulatis 4–6 poll. longis 2–3½ poll. latis primo supra saturate viridibus pilis crispulis purpureo-rufis tenuibus obtecta mox basi excepta glabratis subtus pallidis primo in nervis venisque dense villoso-tomentosis deinde glabratis e basi 7- (ramis 5-) nervibus venis transversis subhorizontalibus crebris, petiolo 1–2 poll. longo, panicula terminali purpureo-furfuracea minuti-bracteata, pedicellis brevibus gracilibus, calyce hemisphærico truncato parce crispe-pubescente demum glabrescente, petalis 5 oblique-obovatis apiculatis fere semipollicaribus, staminibus 10 æqualibus, antheris lineari-lanceolatis, connectivo basi haud producto antice appendicibus 2 brevibus antheræ subcontiguis postice calcare subtrilobo latiusculo brevi aucto, stigmati subcapitato, fructu bacciformi pericarpio irregulariter (?) rumpente, seminibus subrhombeis, embryo recto cylindrico, rhaphe spongiosa embryone multo latiore. *O. Stapf.*

The genus *Phæoneuron*, founded by Gilg on a tropical W. African plant closely allied to *Dicellandra*, has, together with other allied *Melastomaceæ* from the same region, been studied by Dr. Stapf, with the result that the generic characters of the first-named genus must be modified, and both enlarged by characters afforded by their seeds. In anticipation of a paper on the subject which he proposes to publish, he has given me the following diagnoses of both genera, with a list of the species appertaining to each:—

Dicellandra, *Hk. f.* *Stem* 4-angled. *Calyx* 5-toothed. *Stamens* in 2 sets differing in shape and size; basal appendages of connective filiform, pointed. *Seeds* obovoid, appendaged at the upper posticous end; testa thin, brittle, granular anticously above; raphe hollow walls, thin. *Embryo* subovoid, placed beneath the granular portion of the testa. D. Barteri, *Hk. f.*, Fernando Po.

Phæoneuron, *Gilg.* *Stem* terete. *Calyx* entire. *Stamens* all alike, or nearly so; basal appendages of connective short, tips thickened. *Seeds* subcuneiform; testa smooth; rhaphe large, spongy or corky. *Embryo* subcylindric, occupying the whole anticous side of the seed.

1. P. dicellandroides, *Gilg.* Cameroons.

August 1st, 1900.

2. P. setosum, *Stapf.* (*Dicellandra setosa*,, Hk. f. *D. liberica*, Gilg.) Sierra Leone, Liberia.
3. P. Moloneyi, *Stapf.* (Tab. nostr.) Lagcs.
4. P. Schweinfurthii, *Stapf.* (*P. dicellandroides*, Gilg. partim). Central Africa.

Phæoneuron Moloneyi was raised from seeds sent from Lagos to the Royal Gardens, Kew, by Sir Cornelius Moloney, K.C.M.G., when Administrator of that colony. It flowered in September, 1884, in a Tropical House.

Descr.—*Stem* herbaceous, terete; branches obtusely tetragonous, and petioles and panicles covered with purplish furfuraceous pubescence. *Leaves* four to six inches long, ovate or elliptic-ovate, sub-acuminate, base rounded or sub-cordate, young, puberulous above, with crisped hairs, mature, glabrous, or nearly so, nerves five to seven, tomentose beneath in the young leaves; petiole one to two inches long *Panicle* terminal, lax-flowered; bracts minute. *Flowers* shortly pedicelled, about an inch broad. *Calyx* hemispheric, faintly furfuraceous, mouth truncate, entire. *Petals* obliquely obovate, pale rose-purple within. *Stamens* 10, equal; anthers linear-lanceolate, basal appendages short; tips thickened. *Style* slender, stigma capitellate. *Berry* globose. *Seeds* many, rhombic-cuneiform; testa rather rough.—*J. D. H.*

Fig. 1, vertical section of flower; 2, calyx; 3, stamens; 4, upper half of style and stigma; 6, seeds:—All but fig. 2 *enlarged.*

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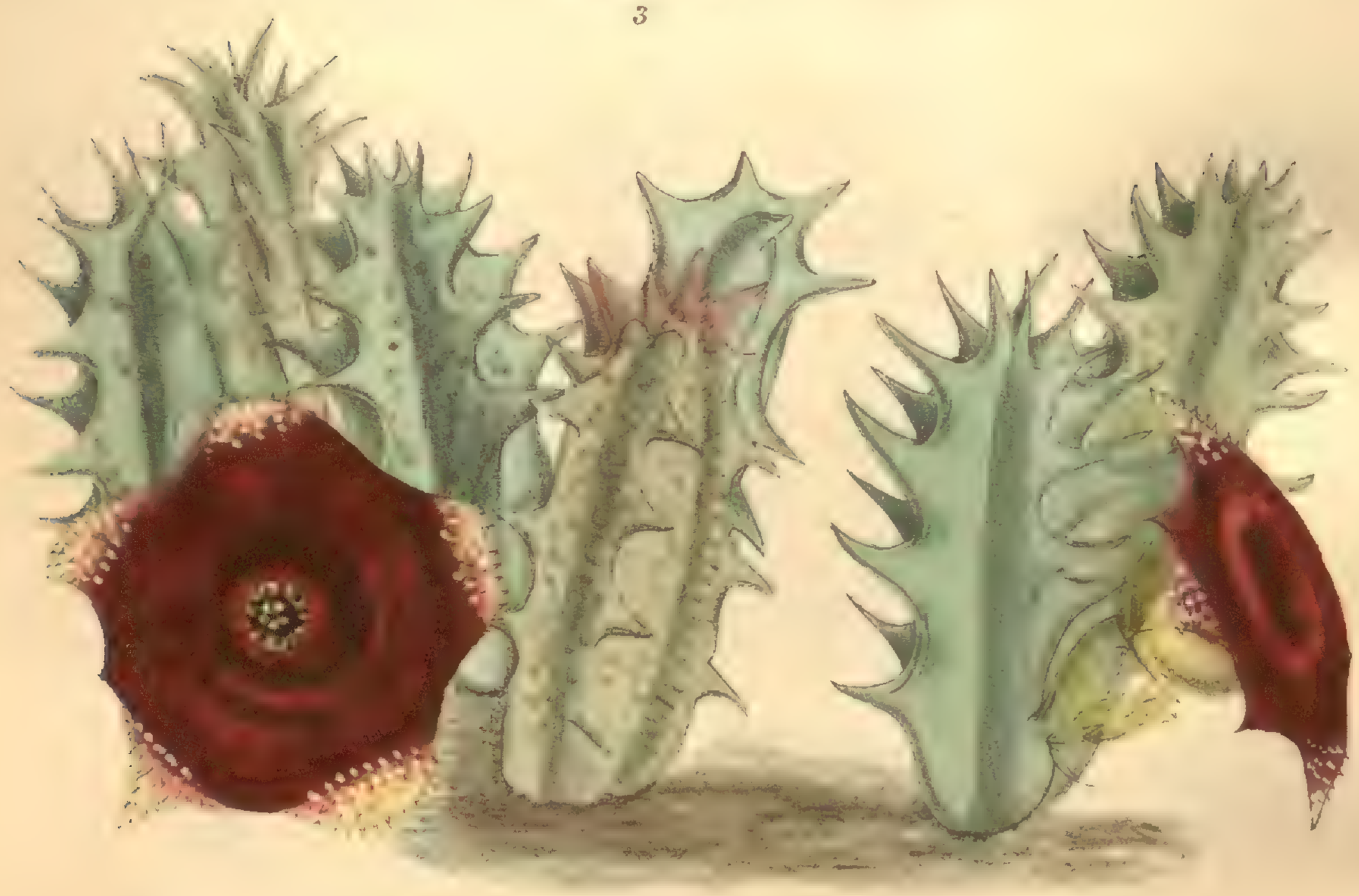

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Tab. 7730.

HUERNIA somalica.

Native of Somaliland.

Nat. Ord. Asclepiadeæ.—Tribe Stapelieæ.

Genus Huernia, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 784.)

Huernia *somalica*; caulibus brevibus crassis pentagonis glabris pallide viridibus, angulis crassis grosse sinuato-dentatis, dentibus ad ¼ poll. longis deltoideo-subulatis lateraliter compressis apicibus spinescentibus, floribus basin versus ramorum erratis breviter crasse pedicellatis, sepalis subulatis ¼-poll. longis, corollæ tubo parvo subgloboso-campanulato glabro, limbo 1½–2 poll. diam. patenti-recurvo glabro fusco-purpureo remote 5-lobato, lobis deltoideis acutis ochraceis papillis rubris ornatis, sinubus latis medio dentiferis, coronæ exterioris lobis subquadratis bifidis glabris sanguineis, interioris lobis late subulatis incurvis conniventibus luteis, antherarum loculis angustis pallidis, polliniis clavatis glandula bialata sessilibus.

H. somalica, *N.E. Br. in Kew Bulletin*, Nov., 1898, p. 309.

The genus *Huernia*, Br., consists of about sixteen species of South African and Tropical African plants, distinguished from *Stapelia* chiefly by the toothed sinus of the corolla and adnate outer corona. Nine of these, including *H. somalica*, have been figured in this work, some of them under *Stapelia*. I am indebted to Mr. N. E. Brown for the following enumeration of them:—*H. venusta*, R. Br. (*St. lentiginosa*, Sims, t. 505). *H. campanulata*, R. Br. (*S. campanulata*, Mass. t. 1227). *H. clavigera*, Haw. (as *S. campanulata*, Mass. t. 1661, and *S. barbata*, Mass. t. 2401). *H. reticulata*, Haw. (*S. reticulata*, Mass. t. 1662). *H. Hystrix*, N. E. Br. (*S. Hystrix*, Hk. f. t. 5751), *H. brevirostris*, N. E. Br. (t. 6379); all from South Africa; and *H. oculata*, Hk. f. (t. 6658), and *H. aspera*, N. E. Br. (t. 7000), from Tropical Africa.

Huernia somalica was brought from Somaliland by Mrs. Lort Phillips, who presented living specimens, both to the Royal Gardens, Kew, and to the Gardens of the University of Cambridge, with the information that it was called "Anahrob" by her Somali boy. It flowered for the first time at Cambridge in July, 1897, and in the following year at Kew. The figure is of the Cambridge specimen.

August 1st, 1900.

Descr.—*Stems* short, two to three inches high, about an inch in diameter, simple, sub-erect, five-angled, glabrous, pale green; angles deeply, regularly sinuate-toothed; teeth about a fourth of an inch long, subulate-deltoid, laterally compressed, green, pungent. *Flowers* from the lower part of the stem stoutly pedicelled, one and a half to two inches in diameter; pedicel sigmoidly curved, stout. *Sepals* subulate, about a fourth of an inch long. *Corolla-tube* small, globosely campanulate, glabrous; limb spreading and recurved, forming an annulus around the mouth of the tube, dark purple, glabrous, remotely five-lobed; lobes deltoid, spreading, acute, ochraceous, studded with purple papillæ; sinus with a minute tooth. *Corona* very small; outer lobes sub-quadrate, bifid, glabrous, blood-red; inner broadly subulate, incurved, with their tips connivent, golden-yellow, bases tumid. *Pollinia* narrowly clavate, seated on a two-winged gland.—*J. D. H.*

Fig. 1, staminal corona; 2, the same, with the inner lobes removed; 3 and 4, pollinia:—*All enlarged.*

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Tab. 7731.

SENECIO auriculatissimus.

Native of British Central Africa.

Nat. Ord. Compositæ.—Tribe Senecionideæ.

Genus Senecio, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 446.)

Senecio *auriculatissimus*; frutex scandens, glaberrimus, divaricatim ramosus, ramis ramulisque teretibus levibus, foliis gracile petiolatis transverse oblongis obreniformibus v. late reniformi-rotundatis late crenatis palmatim nervosis supra læte viridibus nervis obscuris subtus pallidis nervis validioribus, petiolo supra canaliculato basi in auriculam magnam ovatam profunde cordatam amplexicaulem convexam dilatato, capitulis ad apices ramulorum laxe corymbosis gracile pedicellatis ad pollicem diametro, pedicellis minute braceteolatis, involucri cylindracei basi rotundati nudi bracteis linearibus acuminatis, floribus aureis radii 12–15, ligula lineari apice 3-crenata, disci tubulosis 5-dentatis, antherarum loculis basi acutis, styli ramis revolutis obtusis ex-appendiculatis, achæniis linearibus alte 5-costatis costis puberulis, pappi mollis albi setis subscaberulis.

S. auriculatissimus, *Britten in Trans. Linn. Soc.* ser. ii. vol. iv. pars i. p. 21. *Engler Pflanzenw. Ost. Africa*, Theil C. p. 418.

This very remarkable groundsel is a native of Nyassaland and of the Shiré Highlands, in British Central Africa. It was discovered in 1887 by Mr. J. T. Last, near Milangi, and has subsequently been sent from the Zomba Plateau, alt. five thousand feet, by Sir H. H. Johnston, K.C.B., from Namapi, in Nyassaland, by Mr. Cameron, from Mt. Bombo, alt. four thousand feet to six thousand feet, by Mr. Whyte in 1896, and by Mr. J. Buchanan from the Shiré Highlands. In habit and the auricled petioles it resembles several Indian species, and the garden *Cineraria*.

S. auriculatissimus was raised in the Royal Gardens, Kew, from seeds sent by Mr. John Mahon, Government Botanist, British Central Africa, in 1898. It flowered in the Conservatory in February of the present year, where it began to climb one of the pillars, and is a very attractive object.

Descr.—A perfectly glabrous, climbing shrub, with terete, smooth stem, and divaricating branches. *Leaves* petioled, spreading, broader than long, transversely oblong

or obreniform or orbicular-reniform, two to two and a half inches broad, coarsely crenate, bright green above, with faint, spreading nerves, which are strongly raised on the pale under surface; petiole one to two inches long, very slender, channelled above, suddenly dilated at the base into an ovate, amplexicaul, convex, green auricle, upwards of an inch long. *Heads* pedicelled in lax terminal corymbs, an inch in diameter, pedicels short; with scattered subulate bracteoles. *Involucre* cylindric, smooth, green, base ecalyculate; bracts linear, acuminate. *Florets* golden-yellow; of the ray twelve to fifteen; ligules linear, tip three-toothed; of the disc tubular, campanulate above, with five short teeth. *Arms of style* linear, revolute, obtuse, not appendaged. *Achenes* linear, strongly five-ribbed, ribs pubescent. *Pappus hairs* soft, faintly scaberulous, white.—*J. D. H.*

Fig. 1, floret of ray; 2, its style-arms; 3, floret of disk; 4, anthers; 5, its style-arms; 6, hairs of pappus; 7, ripe achene.—*All enlarged.*

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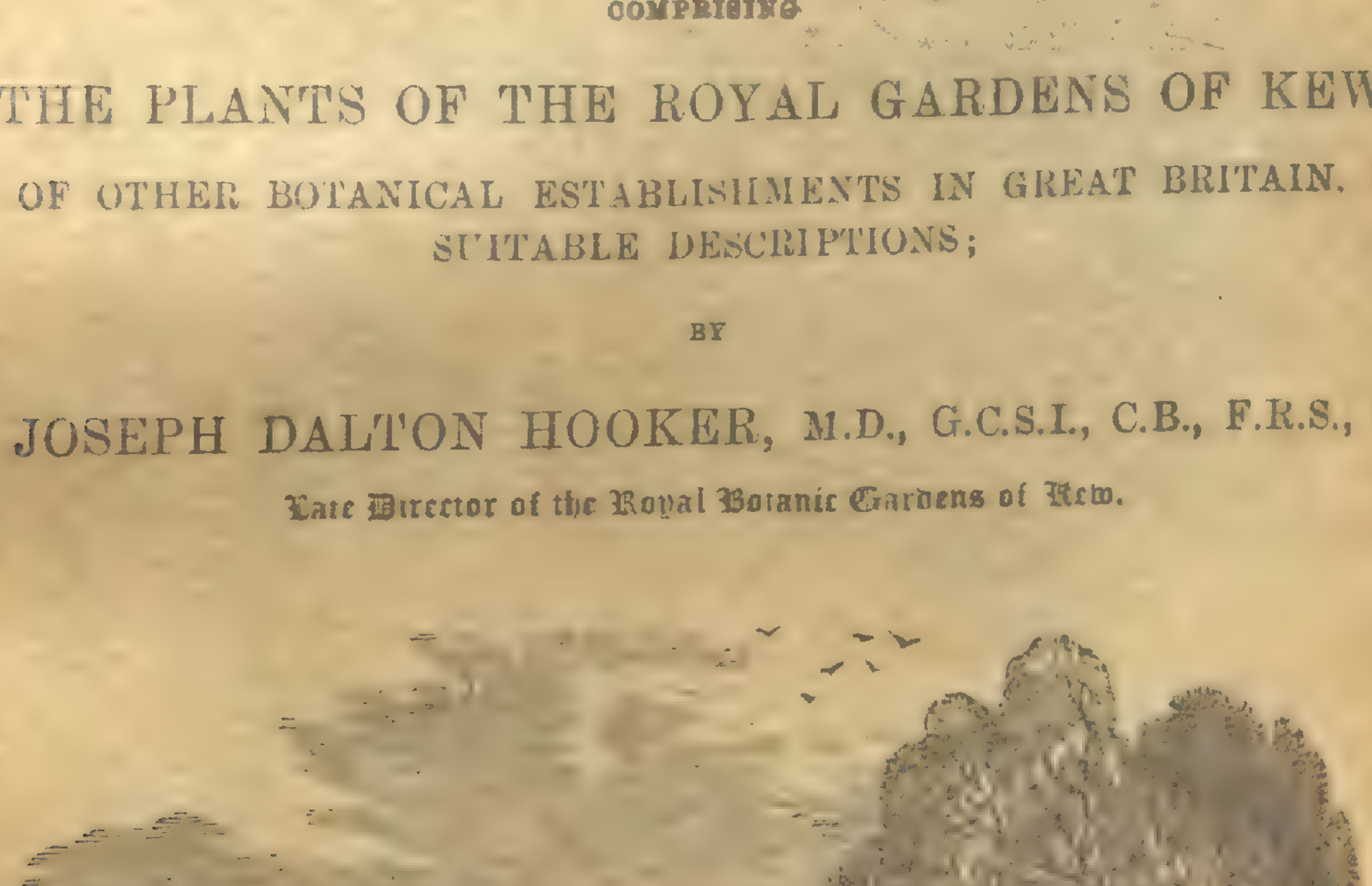

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Tab. 7732.

COLOCASIA antiquorum, *var.* Fontanesii.

Native of Tropical Asia.

Nat. Ord. Araceæ.—Tribe Colocasieæ.

Genus Colocasia, *Schott*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 974.)

Colocasia *Antiquorum*, var. *Fontanesii*; rhizomate brevi carnoso vix tuberoso, turionibus bipedalibus, foliis 1–2-pedalibus cordato-ovatis v.- oblongis acutis v. cuspidatis saturate viridibus marginibus nervisque violaceis subtus pallidis, petiolo 3–5-pedali scapo que breviore et robustiore rubro-purpureis v. violaceis, spathæ tubo 3-pollicari 1¼ poll. diam. oblongo-cylindraceo rubro-purpureo collo aureo, lamina aperta 10-pollicari 4 poll. lata oblonga caudato-acuminata primulina, spadicis appendice parvo conico, infl. masc. quam fœm. paullo longiore neut. fœm. subæquilonga, ovariis minutissimis.

C. antiquorum, *var.* Fontanesii, *Schott Syn. Aroid.* p. 42. *Prodr. Syst. Aroid.* p. 140. *Engl. in DC. Monogr. Phanerog.* vol. ii. p. 491.

C. Fontanesii, *Schott in Œstr. Bot. Wochenbl.* 1854, p. 409. *K. Koch in Berlin. Allgem. Gartenzeit.* 1858, p. 362.

C. violacea, *Hort.*

Caladium colocasioides, *Hort. Par. ex Brongn. in Nouv. Ann. Mus. Par.* vol. iii. (1834) p. 156. *Kunth Enum. Pl.* vol. iii. p. 43.

C. violaceum, *Hort. ex Engl. l. c.* p. 492.

Arum colocasioides, *Desf. Cat. Hort. Par.*, pp. 7 et 385.

Colocasia antiquorum, figured at t. 7364 of this work, is an exceedingly variable plant, of which four forms (including *Arum nymphæifolium*) are considered by Roxburgh to be indigenous in India, and two or three others are cultivated. Engler enumerates seven varieties, distinguished chiefly by the length of the suckers given off from the tuber, the length of the appendix of the spadix and the colour of the leaves and petioles.

That here figured, which was named *C. Fontanesii* by Schott, was founded on the *Arum colocasioides* of Desfontaines, who gives the following character, "Affine *A. colocasiæ*, petioli violacei æque ac *Colocasia*, differt lobis posticis productioribus, nervis violaceis, venulis paginæ inferioris paucioribus nec arcuatim patentibus ut in *Colocasia*. Non floruit." According to Schott it differs from *C. antiquorum* proper in the shortness of the suckers, violet petioles, and more oblong, obscurely green blade of

the leaf with violet margins. He adds that it was known in Holland as early as 1680 to 1690 as "Arum Colocasia dictum zeylanicum pediculis punicantibus." This would indicate Ceylon as the origin of var. *Fontanesii*, which is so far confirmed by Trimen, who describes the petioles of *C. antiquorum* as being green or violet. Roxburgh mentions a variety with leaves and petioles more or less tinged with purple as wild in India. The only other description of it is by Karl Koch, according to which the leaves are brownish, and the petiole violet-purple.

The plant here figured differs from any form of *C. antiquorum* known to me in the red-purple petioles and peduncles, and in the great size of the spathe, the tube of which is three inches long, of a bright red-purple colour, and in the oblong limb ten inches long by four broad, very flat after expansion, and of a bright primrose colour. The appendage of the spadix is a very small cone. This character of the large open spathe has not been figured, described, or seen by me in any other form of *C. antiquorum*, in which the spathe is normally much narrower, erect, and convolute, or very concave. It has been for many years in cultivation in Kew and elsewhere in Britain. The specimen figured was sent to me from the University Botanical Garden, Cambridge, by Mr. Lynch in July, 1899.—*J. D. H.*

Fig. 1, spadix slightly *enlarged*; 2, stamens, and 3, ovary, both much *enlarged*; 4, *reduced* view of whole plant.

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Tab. 7733.

ASPARAGUS umbellatus.

Native of Madeira and the Canary Islands.

Nat. Ord. Liliaceæ.—Tribe Asparageæ.

Genus Asparagus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 765.)

Asparagus (Asparagopsis) *umbellatus*; caule gracili scandente, ramis deflexis elongatis sulcatis v. polygonis scaberulis, internodiis brevibus, foliis brevibus deltoideo-calcaratis v. obsoletis, cladodiis fasciculatis 3–10-natis acicularibus v. fere filiformibus obscure trigonis acuminatis glabris v. subscaberulis luride viridibus, pedicellis axillaribus solitariis et ad apices ramulorum umbellatis $\frac{1}{3}$–$\frac{1}{2}$ poll. longis longe infra medium articulatis, bracteis minutis subulatis, floribus pro genere magnis, perianthii campanulati segmentis $\frac{1}{3}$ poll. longis anguste oblongis obtusis albis recurvis, filamentis supra basin segmentorum insertis illis brevioribus, antheris majusculis oblongis aureis, ovario imperfecto fusiformi perfecto obovoideo stylo elongato, stigmatibus 3-recurvis, ovulis numerosis, bacca ad $\frac{1}{2}$ poll. diam. monosperma, semine nigrescente.

A. umbellatus, *Link in Buch, Beschreib. Canar. Ins.* p. 140. *Buch, Allgem. Uebericht. Fl. Canar. Ins.*, p. 162. *Webb & Berth. Phyt. Canar.* vol. iii. part iii. p. 327, t. 227. *Kunth, Enum. Pl.* vol. v. p. 79.

A. umbellatus, *var.* scaber, *Baker in Journ. Linn. Soc.* vol. xiv. (1875) p. 611.

A. grandiflorus, *Willd. Herb. ex Webb. & Berth. l. c. Bresl. Gen. Asparag. Hist.* n. 23.

A. dichotomus, *Brouss. ex Webb. & Berth. l. c.*

A. scaber, *Lowe in Trans. Camb. Phil. Soc.* vol. iv. (1831); *Primit. et Novit. Fl. Mader.* p 11.

A. Lowei, *Kunth, l. c.*

Asparagopsis umbellata & grandiflora, *Kunth, l. c.* pp. 73, 79.

Asparagus umbellatus is remarkable for the large size of its flowers, which are usually collected in simple umbels at the tips of the branchlets. It is a native of rocky places in the Island of Madeira and the Canaries, where it was discovered (in the Canaries) by Francis Masson, F.L.S., the first collector sent out from the Royal Gardens, Kew, under Sir Joseph Banks' auspices in 1778, to that Archipelago and the Azores. It was subsequently found in Madeira. It has for many years been cultivated in the Royal Gardens, Kew, where, in the Temperate House, it is trained up one of the pillars for about twelve feet, flowering in September, and ripening its fruit in the same month of the following year.

September 1st, 1900.

Mr. Baker (*Journ. Linn. Soc. l.c.*) regards *A. scaber*, Lowe, as a variety of *A. umbellatus*, but Webb and Berthelot do not; and I fail to find sufficient characters whereby to distinguish it. The cladodes attain a greater length under cultivation than I find them to be in any specimens preserved in the Kew Herbarium.

Descr.—*Stem* slender, climbing, woody and terete below; branches flexuous, drooping, angled and grooved; internodes short, angles of the branchlets minutely scaberulous. *Leaves* minute, deltoid, or 0. *Cladodes* in fascicles of three to ten, one half to one inch long, acicular or filiform, tips rounded or pungent, terete, or obscurely angled, smooth or sparsely scaberulous, very dark green. *Flowers* three to six in an umbel at the tips of the branchlets, with often a few axillary in the fascicles of the cladodes, white; pedicels one-third to half an inch long, jointed considerably below the middle; bracts minute. *Perianth* campanulate; segments narrowly oblong, obtuse, recurved, one-third of an inch long. *Filaments* inserted above the bases of the segments, rather shorter than these; anthers large, oblong, golden-yellow. *Berry* globose, about half an inch in diameter, bright red, one-seeded. *Seed* nearly black.—*J. D. H.*

Fig. 1, portion of branchlet and cladodes; 2 and 3, anthers; 4, ovary:—*All enlarged.*

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Tab. 7734.

IRIS stenophylla.

Native of Asia Minor.

Nat. Ord. Irideæ.—Tribe Moreæ.

Genus Iris, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 686.)

Iris (Juno) *stenophylla*; bulbo ovoideo, tunica extima brunnea primum fissa, interiorum 3 exterioribus in vaginas elongatas pallidas obtusas folia basi amplectentes productis, radicibus crassis, foliis 6–7 temp. florent. tubo floris vix longioribus demum elongatis 8–10 poll. longis anguste linearibus in apicem acuminatam angustatis concavis, scapo brevi unifloro, flore 4-poll. expans., spathæ valvis herbaceis, perianthii tubo 2½-pollicari exserto ovario pluries longiore lilacina, limbi segmentis exterioribus 2½ pollicaribus stipitatis, stipite ½-pollicari suberecto crasso, limbo late ovato-oblongo basi cordato cœruleo parte reflexa rotundata apice late saturate violacea et maculis paucis violaceis conspersa, crista media angusta aurea, interioribus parvis vix pollicaribus patenti-deflexis obovato-spathulatis obtusis pallide cœruleis, styli ramis amplis segmentis fere æquilongis, 1½ poll. latis bilobis crenatis cæruleis, filamentis liberis.

I. stenophylla, *Hausskn. mss. ex Baker in Gard. Chron.* 1900, vol. i. p. 170, fig. 55.

I. Heldreichii, *Hort.*

This singularly beautiful plant is a near ally of *Iris persica*, L., the figure of which (tab. 1) is the first of the 7733 which precede that of *I. stenophylla* in this Magazine. It belongs to the section *Juno* of the sub-genus *Xiphion*, which consists of about fourteen species, all natives of Western Asia, characterized by the bulbous rootstock, and very small spreading or deflexed inner segments of the perianth. As in *I. persica* and others, the leaves are not fully developed till long after flowering. It was discovered in the Cilician Taurus, by Heldreich I assume, as the bulbs which were purchased by the Royal Gardens, Kew, from Mr. Siehe, of Mersina (near Tarsus) in 1898, were labelled *I. Heldreichii*. It flowered in a sheltered sunny border, in the open air, in February of this year.

Descr.—*Bulb* ovoid, about an inch in diameter, with very stout vermiform roots; outer coat short, dark brown, cleft to the base, three succeeding elongating, imbricating, obtuse, very pale, forming a neck two inches long, sheath-

ing the bases of the young leaves. *Leaves* at the flowering time rather longer than the perianth-tube, after flowering elongating to eight or ten inches, narrowly linear, gradually contracted to an acuminate point, concave. *Scape* very short. *Spathe* bright green, nearly as long as the perianth-tube. *Flower* solitary; four inches broad. *Perianth-tube* two and a half inches long, pale lilac; outer segments stoutly stipitate, stipes half an inch long; blade two inches long, very broadly ovate-oblong, base broadly cordate, pale blue, the reflexed portion rounded, deep violet-blue on the upper fourth, and with a few large deep violet spots lower down, crest narrow, golden-yellow; inner segments hardly an inch long, spreading and reflexed, spathulately ovate-oblong, obtuse, concave, pale blue. *Filaments* free. *Style-arms* nearly as long as the outer perianth-segments, one inch and a half broad, nearly orbicular, two lobed and irregularly crenate, blue.—*J. D. H.*

Fig. 1 and 2, anthers, *enlarged*.

M.S. del. J.N. Fitch lith.

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Tab. 7735.

PEDICULARIS, curvipes.

Native of the Sikkim Himalaya.

Nat. Ord. Scrophularineæ.—Tribe Euphrasieæ.

Genus Pedicularis, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 978.)

Pedicularis (Rhyncolophæ) *curvipes*; caule gracili primo suberecto demum elongato decumbente pubescente simplici v. basi ramoso, foliis sparsis petiolatis ovatis oblongisve pinnatifidis v. pinnatisectis segmentis 3–5-jugis cum impari oblongis obtusis marginibus lobulatis crenatisve glabris puberulisve, petiolo lamina breviore, floribus axillaribus fere racemosis ad 1 poll. longis, pedicellis erectis calyce longioribus fructiferis decurvis, calycis tubo oblongo antice triente fisso puberulo, limbi lobulis 2 auriculæformibus obovatis crenatis cum tertio postico dentiformi interjecto, corollæ tubo calycem æquante recto cylindraceo, labio sessili roseo $\frac{2}{3}$-poll. lato paullo latius quam longo 3-lobo membranaceo, lobis lateralibus rotundatis intermedio parvo rotundato emarginato, galea arcuato-incurva inflata puberula erecta dein medium versus incurva et in rostrum decurvum apice integrum lobum lateralem labii spectantem attenuata, staminibus medio tubo corollæ insertis, filamentis glaberrimis, capsulis pendulis $\frac{1}{3}$–$\frac{1}{2}$ poll. longis oblongis falcatis calycis tubo ad medium vestitis, seminibus paucis ellipsoideis vix reticulatis.

P. curvipes, *Hook. f. Fl. Brit. Ind.* vol. iv. p. 316. *Maxim. Mél. Biol.* pars xii. p. 919. *Clarke in Journ. Linn. Soc.* vol. xxv. (1890) p. 51. *Prain in Ann. R. Bot. Gard. Calcutta,* vol. iii. p. 151, t. 35, fig. A.

The genus *Pedicularis* is widely spread in the temperate and alpine regions of India. Thirty-seven species are described in the "Flora of British India," published in 1884, a number increased to sixty-nine by Dr. Prain in his admirable memoir on the genus published in the Annals of the Royal Botanic Gardens, Calcutta, in 1891; this great accession being mainly due to the discovery of new species by the activity of collectors for those gardens in the Eastern Himalaya, Assam, and Burma. *P. curvipes* was discovered by C. B. Clarke at Tumbok, alt. ten thousand feet, in the Sikkim Himalaya, and was subsequently collected by him on Jakvo in the Naga hills, bordering Assam on the south, at a little lower elevation (nine thousand feet to nine thousand five hundred feet). On both occasions fruiting specimens alone were obtained, which led to its being referred (doubtfully) to a wrong section of the genus, in

both the "Flora of British India" and in Dr. Prain's monograph. In Dr. Prain's system its proper place is in Division *Longirostres*, *Siphonantheæ*, *B. Brevitubæ*, where it forms of itself a sub-division characterized by its slender, decumbent habit, and its capsules. It has no near ally as a species.

I am indebted to A. K. Bulley, Esq., of Ness, Neston, Cheshire, for the specimen here figured of this very interesting plant. It was raised from seed sent by Dr. Prain from the Royal Gardens, Calcutta, and flowered in May of the present year.

Descr.—*Stems* very slender, at first sub-erect, then elongating to a foot or more, flexuous and decumbent, simple or branched at the base. *Leaves* scattered, spreading and recurved, one to two inches long, oblong or ovate-oblong, pinnatisect (or the lowest pinnatifid), glabrous or puberulous; segments seven to eleven, spreading, oblong, obtuse, margins irregularly crenate or lobulate; petiole puberulous. *Flowers* solitary, axillary, pedicelled, about one inch long; pedicels erect, longer than the calyx, puberulous, fruiting decurved. *Calyx-tube* one-third of an inch long, narrowly oblong, split for one-third of its length; limb of two small obovate-oblong crenate auricles. *Corolla-tube* not longer than the calyx; lower lip sessile, two-thirds of an inch broad, pale rose-colrd., white towards the mouth, glabrous, three-lobed, lateral lobes obliquely rounded, median much smaller, orbicular, emarginate or obcordate; upper lip puberulous, bright rose-red, erect and inflated, then arched, and forming a decurved, rather slender beak. *Filaments* inserted about the middle of the corolla-tube, very slender, quite glabrous. *Capsule* a third of an inch long, falcately oblong, acute, clothed for half its length by the calyx.—*J. D. H.*

Fig. 1, leaf; 2, flower; 3, calyx and style; 4, calyx laid open and ovary; 5 and 6, anthers:—*all enlarged*; 7, portion of stem leaves and capsule of *nat. size*.

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Tab. 7736.

CORYLOPSIS PAUCIFLORA.

Native of Japan.

Nat. Ord. Hamamelideæ.

Genus Corylopsis, *Sieb. & Zucc.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 667).

Corylopsis *pauciflora*; frutex ramis ramulisque gracilibus glabris, foliis distichis cordato-rotundatis acutis membranaceo-chartaceis 7–9-nerviis nervis supra depressis subtus prominulis in mucrones marginales excurrentibus supra læte viridibus marginibus fusco-rubris plagis intercostalibus tumidis medio sericeo-pilosis, subtus pallidis pubescentibus, petiolis gracilibus ½–1 poll. longis, stipulis ½ poll. longis oblongo-lanceolatis acuminatis concavis albis, floribus ½-poll. diam. in racemulos breves 2–3-floros secus ramulos gracillimos aphyllos dispositis brevissime pedicellatis, racemulis subsessilibus bracteis orbicularibus membranaceis concavis intus pilosis onustis, calycis tubo brevi lobis parvis rotundatis, petalis obovato-rotundatis concavis primulinis, disci glandulis conicis obtusis, antheris oblongis bilocularibus, connectivo apice conico obtuso.

C. pauciflora, *Sieb. & Zucc. Fl. Jap.* vol. i. p. 48, t. 20. *Walp. Rep.* vol. ii. p. 434. *Miquel, Ann. Mus. Bot. Lugd.-Bat.* vol. iii. (1867) p. 21. *Franch. & Sav. Enum. Pl. Jap.* vol. i. p. 163. *Gard. Chron.* 1899, vol. ii. p. 24. *Gartenfl.* 1899, t. 1467.

Hinga-miduki, *Jap.*

Corylopsis is a genus of six species of shrubs, natives of the Eastern Himalaya, China, and Japan. It is closely allied to *Hamamelis*, of which there are two species, one, the N. American "Witch Hazel," *H. virginiana*, L. (tab. 6684), the other Japanese, *H. japonica*, Sieb. & Zucc. (tab. 6659). One species of *Corylopsis* has been figured in this work, *C. spicata*, Sieb. & Zucc. (tab. 5458) which differs from *C. pauciflora* in the much larger leaves, longer, many-flowered racemes, and longer petals; it is also a native of Japan.

The figure of *C. pauciflora* is made from a plant procured from Messrs. Veitch & Sons, which flowered in the Temperate House of the Royal Gardens, Kew, in March of the present year. It is a native of Japan, whence there are specimens in the Kew Herbarium, from Yokohama, in the Island of Nipon, collected by Bisset and Dickins, and from Kisurio, near Nagasaki, in the island of Kiusiu, by Maximovicz.

September 1st, 1900.

Descr.—A small shrub, flowering before leafing; branches and branchlets very slender, glabrous. *Leaves* distichous, one and a half to three and a half inches long, often as broad as long, orbicular-cordate, acute or acuminate, bright green above, margined with red-brown, glabrous above, except in the margins, and in the silkily hairy centre of the interspaces between the sunk nerves, of which there are seven to nine pairs; beneath pale, with raised, pubescent nerves; petiole very slender, one half to one inch long. *Stipules* half an inch long, oblong-lanceolate, acuminate, membranous, concave, white, hairy within, caducous. *Flowers* bracteate and bibracteolate, about two-thirds of an inch in diameter, disposed in small distant two- or three-flowered short, sessile racemes, which are scattered along very slender, flexuous, leafless branches. *Bracts* crowded, one-fourth to one-third of an inch long, orbicular or oblong, concave, very pale green, membranous, hairy within. *Calyx-lobes* very small, rounded. *Petals* orbicular-obovate, primrose-yellow.—*J. D. H.*

Fig. 1, portion of leaf; 2, calyx, stamens, and base of bract; 3, calyx with two lobes removed, showing the disk-glands and ovaries; 4 and 5, anthers:—*all enlarged.*

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Tab. 7737.

HIPPEASTRUM Harrisoni.

Native of Uruguay.

Nat. Ord. Amaryllideæ.—Tribe Amaryllæ.

Genus Hippeastrum, *Herb.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 724.)

Hippeastrum (Habranthus) *Harrisoni*; bulbo globoso 2-poll. diam. atro-brunneo, collo perbrevi, foliis ad 6 loratis 1–1½-pedalibus 1½–1¾ poll. latis apice rotundatis supra subconcavis læte viridibus albo marginatis ecostata subtus pallide viridibus costa apicem versus lata crassiuscula, scapo bipedali cylindraceo glauco-viridi, bracteis 2 oblongo-lanceolatis bipollicaribus membranaceis paliide brunneis, umbella 3–4-flora, pedicellis 1–1½-pollicaribus suberectis, floribus subdeflexis, ovario brevi, perianthio 4-pollicari anguste infundibulari tubo virescente lobis tubo brevioribus oblongis subacutis intus albis striatis sanguineis infra medium ornatis, staminibus declinatis lobis perianthii brevioribus, antheris ⅓-pollicaribus linearibus falcatis aureis, stylo filamentis multo longiore, stigmatibus 3 linearibus recurvis obtusis.

Hippeastrum Arechavaletæ, *Baker in Kew Bulletin*, 1898, p. 226. *Gard. Chron.* 1899, vol. i. p. 332.

Amaryllis Harrisoni, *Lindl. in Bury, Hexandr. Pl.* t. 27.

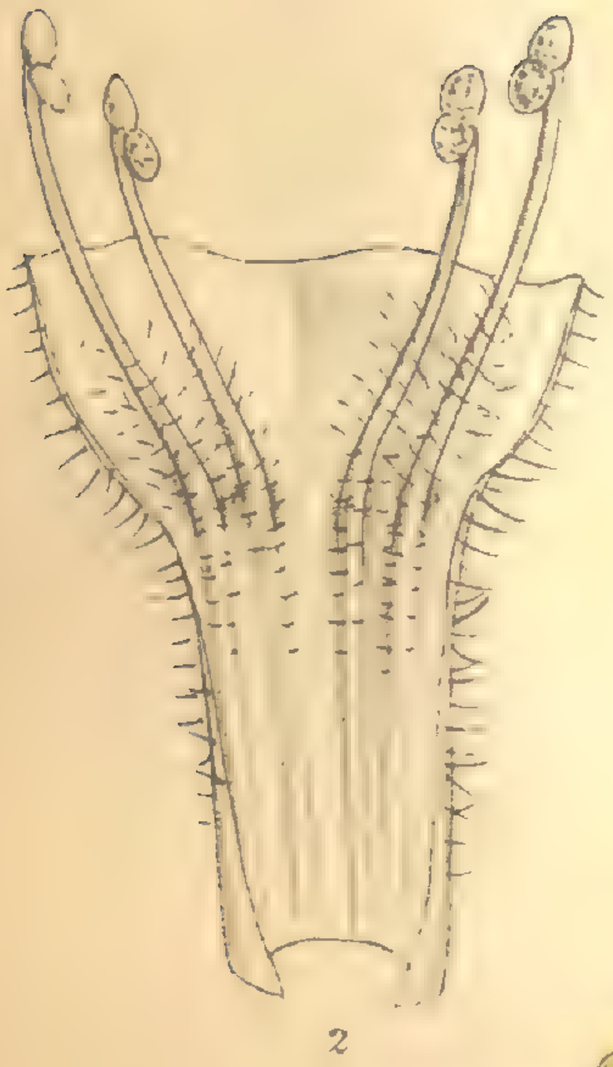
I am indebted to Mr. W. Watson for pointing out to me the identity of the plant here figured with the *Amaryllis Harrisoni* of Mrs. Bury's magnificent folio volume on Hexandrian plants, published upwards of sixty years ago. In the "Kew Index Plantarum" it will be found in the Addenda, p. 1264) referred to *Hippeastrum solandriflorum*, Herb., on the faith of an observation in Baker's Handbook of the *Amaryllideæ*, p. 53. But *H. solandriflorum* is, as may be seen from tab. 2573 of this work, a very different plant, a native of French Guiana and N. Brazil, with a much longer perianth-tube, no markings on the lobes, small anthers, and an almost capitate stigma. It constitutes the sub-genus *Macropodastrum* of Baker. According to Lindley in Bury's work, *Amaryllis Harrisoni* was imported by Mr. Harrison, of Aigburth, near Liverpool, from Peru; but I think this must be an error, for our plant, which differs in no respect from that figured by Bury, except in having a narrower white margin of the leaf, is certainly a native of Uruguay.

October 1st, 1900.

Bulbs of the specimen here figured were received at the Royal Gardens in 1898 from Monte Video. They were forwarded by Mr. C. B. Cantara, with the compliments of Professor Arechavaleta, and flowered in a warm greenhouse in May, 1899.

Descr.—*Bulb* about two inches in diameter, globose; scales dark brown; neck scarcely any. *Leaves* about six, a foot and a half long by one and a half to two inches broad, linear, but rather narrowed below, tip rounded, bright green above, with narrow, white margins, paler beneath, with a broad, low thickened costa towards the tip. *Scape* two feet high, stout, cylindric, dull glaucous green, three- or four-flowered. *Pedicels* sub-erect, stout, green, an inch to an inch and a half long. *Bracts* two, oblong-lanceolate, membranous, pale brown. *Ovary* short, green. *Perianth* four inches long, narrowly funnel-shaped; tube green; lobes oblong, sub-acute, spreading and recurved, pure white, with irregularly placed broad blood-red streaks below the middle. *Stamens* sub-declinate, much shorter than the perianth; anthers large, a third of an inch long, golden-yellow. *Style* much longer than the stamens, declinate; stigmas three, linear, recurved.—*J. D. H.*

Fig. 1 and 2, anthers; 3, top of style and stigmas; *all enlarged*; 4, view of whole plant *reduced*.



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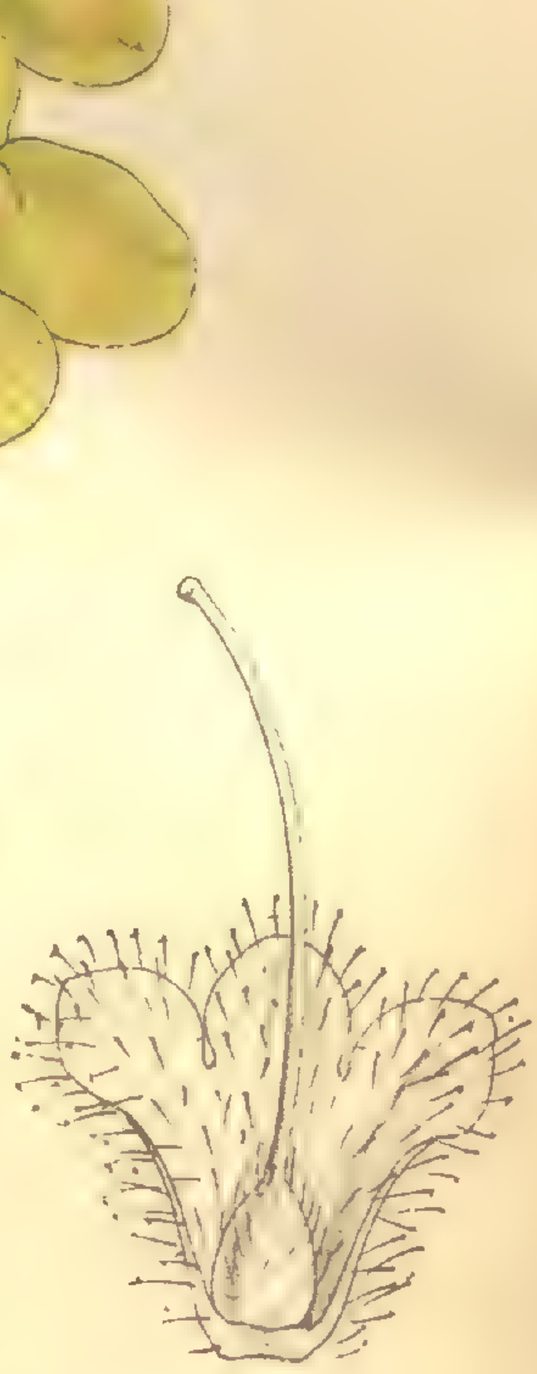

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Tab. 7738.

LINDENBERGIA grandiflora.

Native of the Himalaya.

Nat. Ord. Scrophularineæ.—Tribe Gratioleæ.

Genus Lindenbergia, *Lehm.* (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 948.)

Lindenbergia *grandiflora*; herba annua, foliosa, vage ramosa, subscandens, molliter villoso-pubescens, ramis flexuosis, foliis amplis 2–8 poll. longis floralibus (bracteis) brevioribus oblique ovatis acutis v. acuminatis dentatis, petiolis ½–1 poll. longis, floribus in spicas terminales laxifloras elongatas dispositis subsecundis brevissime pedicellatis, calycis campanulati glanduloso-villosi lobis rotundatis, corollæ aureæ tubo pollicari calyce duplo-triplo longiore piloso, limbi 1 poll. expans. labio superiore brevi rotundato emarginato, inferiore triplo majore 3-lobo, lobis lateralibus oblongo-rotundatis terminali orbiculari, fauce tumoribus 2 oblongis parallelis rubro-puncticulatis instructa, filamentis basi pilosis, ovario **sericeo-villoso, capsula ovoidea apice exserta.**

L. grandiflora, *Benth. Scroph. Ind.* p. 22; *et in DC. Prodr.* vol. x. p. 376. *Hook. f. Fl. Brit. Ind.* vol. iv. p. 261.

Stemodia grandiflora, *Ham. in Don, Prod. Fl. Nep.* p. 89. *Wall. Cat.* n. 3924.

Lindenbergia grandiflora is much the handsomest known species of the genus, of which there are fourteen described, natives chiefly of India, with a few Malayan and tropical African. It is a common plant on the foot-hills of the Himalaya, from Simla to Bhotan, at elevations of two thousand to six thousand feet, and has also been found in Pegu. It probably extends further east, but it has not hitherto been found in China.

The specimen here figured was sent by Mrs. Lynch from the Cambridge University Botanical Gardens, where it flowered in a warm house in March of the present year.

Descr.—A villously pubescent, much-branched, subscandent herb, annual, or with stem woody at the base; branches slender, flexuous, leafy, straggling, six to twenty inches long. *Leaves* all opposite, petioled, lower up to eight inches long, upper or floral (bracts) much smaller, all ovate, acute or acuminate, crenate-serrate, pale green, nerves six to ten pairs; petiole of lower up to four inches long. *Flowers* sub-secund, sub-sessile in the floral leaves, in long, loose leafy spikes, sometimes six inches

long. *Calyx* campanulate, about one-third of an inch long, glandular-villous; lobes equal, spreading, orbicular. *Corolla-tube* two to three times as long as the calyx, laxly hairy, golden-yellow; upper lip short, orbicular, emarginate, lower an inch broad, broader than long, three-lobed; lateral lobes orbicular-oblong; median smaller, orbicular, emarginate; mouth with two large, oblong, parallel swellings which are speckled with red. *Filaments* hairy below the middle; anther-cells obliquely superposed, oblong. *Ovary* silkily villous.—*J. D. H.*

Fig. 1, portion of calyx and ovary; 2, tube of corolla laid open and stamens; 3 and 4, stamens:—*All enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7739.

GREVILLEA ORNITHOPODA.

Native of Western Australia.

Nat. Ord. PROTEACEÆ.—Tribe GREVILLEEÆ.

Genus GREVILLEA, *Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 180.)

GREVILLEA (Manglesia) *ornithopoda*; frutex glaberrimus, ramis ramulisque gracillimis pendulis, foliis anguste cuneatis in petiolum sensim angustatis alte trilobis coriaceis supra laete viridibus subtus pallidis trinerviis, nervis subtus validis, lobis 1–1½ pollicaribus lineari-lanceolatis acuminatis lateralibus quam terminali paullo minoribus falcatis, racemis axillaribus pedunculatis 1–1½ poll. longis foliis brevioribus sæpissime simplicibus multifloris, pedunculo rhachique gracillimis, floribus parvis albis, pedicellis ¼–½ poll. longis filiformibus, perianthii ⅙ poll. longi tubo fusiformi recto, limbo parvo subanthesim globoso, glandula hypogyna minuta semicirculari, ovario minuto stylo multo minore longe stipitato gibboso-globoso, stylo turgido ellipsoideo infra stigma magnum conoideum basique constricto, fructu obliquo rugoso.

G. ornithopoda, *Meissn. Lehm. in Pl. Preiss.* vol. ii. p. 256; *in DC. Prodr.* vol. xiv. p. 391. *Benth. Fl. Austral.* vol. v. p. 486.

Grevillea ornithopoda belongs to one of two small closely allied sections of this very large genus, characterized by a straight perianth-tube and conical stigma. These sections, which have been regarded as genera (*Anadenia*, Br., with nine species, and *Manglesia*, Endl., with ten), are both Western Australian, with the exception of one species of *Anadenia*, which inhabits New South Wales. *G. ornithopoda* belongs to the section *Manglesia*, so named (as a genus) in compliment to Capt. James Mangles, R.N., and his brother, Robert Mangles, Esq., of Sunningdale, through whose exertions many Western Australian plants were introduced into this country half a century ago. Lindley almost simultaneously named a myrtaceous shrub after the brothers Mangles (Swan River App. t. 3) which has been since referred to *Beaufortia*.

G. ornithopoda is a native of the south-western district of the Swan River Colony, between the river of that name and King George's Sound. The specimen figured was sent from the Botanical Gardens of Cambridge, where it flowered in a conservatory in April.

Descr.—A small, perfectly glabrous shrub, with very

slender, drooping branches and branchlets. *Leaves* about four inches long, very narrowly cuneiform, gradually narrowed from above the middle into a petiole, trifurcately cleft into narrowly lanceolate acuminate lobes one to one and a half inches long, of which the median is nearly straight, the lateral rather shorter, divergent and sub-falcate, dark green above, paler beneath, with a stout median costa. *Flowers* small, white, in short, oblong, peduncled, axillary, very many-flowered, one to one and a half inch long, pale greenish-yellow racemes; peduncle and rhachis filiform; pedicels capillary, one-third to one half of an inch long. *Perianth* (unopened) one-sixth of an inch long; tube fusiform, straight; segments reflexed from the base, staminiferous portion elliptic, with an incurved cusp. *Anthers* sessile, shortly oblong. *Hypogynous* disk minute, semi-annular. *Ovary* erect, on an erect, slightly curved stipes, nearly half as long as the perianth-segments, obliquely globose; style fusiform, stout, contracted beneath the broadly conical stigma.—*J. D. H.*

Fig. 1, unexpanded, and 2, expanded flower; 3, hypogynous disk and pistil on its stipes:—*All enlarged.*

M.S del.J.N Fitch lith.

Vincent Brooks, Day & Son. Lith.

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Tab. 7740.

CROCUS Alexandri.

Native of Servia and Bulgaria.

Nat. Ord. Irideæ.—Tribe Sisyrincheæ.

Genus Crocus, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 693.)

Crocus *Alexandri*; cormo globoso parvo, tunicis rigidis pallidis ad basin circumscentibus, spathâ basali nulla, foliis 3–4 synanthiis anguste linearibus albo-vittatis margine revolutis, spathâ propria diphylla, perianthii tubo e spatha longe exserto, limbi segmentis oblongis interioribus utrinque albis, exterioribus facie albis dorso saturate lilacinis vel albis striis tribus lilacinis plumosis ornatis, antheris pallide luteis, filamentis brevibus glabris, styli ramis integris fulvis.

C. Alexandri, *Velen. Fl. Bulgar. Vierte Nachtr.* (1894) p. 26.

C. biflorus, var. Alexandri, *Velen. Fl. Bulgar. Suppl.* (1898) p. 264.

Crocus Alexandri is, in a broad sense, a variety of *C. biflorus*, nearly allied to the Caucasian and Crimean *C. Adami*, J. Gay. In its extreme form it has larger flowers than the type, and the outer segments are flushed with bright lilac all over the back, with a narrow band of white round the margin; but as our plate shows, they often show three feathered lilac stripes on a white ground, as in ordinary *biflorus*. It was first collected by Skopil at Dragalera in 1892. It was introduced into cultivation by Mr. Max Leichtlin in 1899. Our drawing was made from plants that flowered in the Royal Gardens, Kew, in March, 1900, in the open ground.

Descr.—*Corm* small, globose; tunics pale, rigid, cut round the base. *Basal spathe* absent. *Leaves* three or four, produced at the same time as the flowers, narrowly linear, with revolute edges, and a white band down the centre. *Proper* spathe small, membranous, diphyllous. *Perianth-tube* much longer than the spathe, white or tinged with lilac; segments of the limb oblong, above an inch long, the three inner white on both surfaces, the three outer white inside, flushed with lilac all over the back, except a narrow, white, marginal band, or marked on a

white ground with three-feathered lilac stripes. *Anthers* pale yellow; filaments short, white, glabrous. *Style*-branches entire, bright saffron yellow.—*J. G. Baker.*

Fig. 1, section of leaf; 2, proper spathe; 3, anther; 4, branched apex of style:—*All enlarged.*

M.S del. J.N.Fitch. lith.

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Tab. 7741.

DENDROBIUM Jerdonianum.

Native of Malabar.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Swartz*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium *Jerdonianum*; caulibus fastigiatis simplicibus subflexuosis basi attenuatis, internodiis pollicaribus cylindraceis sulcatis, vaginis pilis brunneis hispidulis, foliis 2–2½-pollicaribus subdistichis patenti-recurvis lineari-oblongis apice bidentatis coriaceis, floribus in racemos breves subterminales subsessiles paucifloros dispositis longe pedicellatis, rhachi brevissimo, bracteis minutis obtusis, pedicellis cum ovariis 1¼-pollicaribus, sepalis petalisque consimilibus 1½–1¾ pollicaribus anguste lineari-lanceolatis acutis erecto-recurvis aurantiacis, mento sepalis quater breviore truncato, labello sepalis breviore concolore erecto incurvo, lobis lateralibus brevibus emarginatis, epichilio elongato anguste linguæformi obtuso marginibus profunde sinuato-crenatis, disco 3-carinato, carina media epichilio crenato, columna longiuscula.

D. Jerdonianum, *Wight Ic. Pl. Ind. Or.* vol. v. part I. (1852) p. 6, *in part* (*non* t. 1644). *Rchb. f. in Walp. Ann.* vol. vi. p. 292, *in part*. *Hook. f. Fl. Brit. Ind.* vol. v. p. 734, *excl. Ic. Wight.*

D. villosulum, *Lindl. Gen. & Sp. Orchid.* p. 86; *in Lindl. & Paxt. Fl. Gard.* vol. ii. p. 82, ic. xylog. n. 175, *non Wallich.*

Wight, in describing *Dendrobium Jerdonianum*, gives two habitats for it, namely, Coorg jungles, Jerdon, and Iyamally Hills (which are in the Nilgherry district), adding that "the specimens from the two stations differ in the size of the flowers, but in both they are spurred, and have the same long narrow form, and agree in colour, hence I consider them mere varieties." Of these two forms, that figured by Wight is the smaller flowered, with a spur-like mentum half as long as the sepals, and is, I think, identical with the Cingalese *D. nutans*, for a good figure of which see "Annals of the Royal Botanic Gardens of Calcutta," vol. xii. t. 18. The other, with the larger flowers and very short mentum, here figured, is the Coorg plant of Jerdon, as proved by a sketch of the flower made by that naturalist which is preserved in the Kew Herbarium.

D. Jerdonianum was introduced into England previous to 1852, when it was described by Lindley (in Paxton's "Flower Garden," as *D. villosulum*) from a plant sent

from Tillicherry in Coorg (Jerdon's habitat), which flowered in the garden of the Right Honourable Lady Ashburton. The specimen here figured was presented by Sir Trevor Lawrence, Bt., to the Royal Gardens, Kew, where it flowered in 18.9, and continued in flower for nearly a month.

Descr.—*Stems* ten to twelve inches high, fastigiate, simple, rather flexuous, internodes about an inch long, and one-sixth of an inch in diameter, cylindric, grooved, not swollen in the middle, clothed with sheaths that are hispidulous with dark brown hairs. *Leaves* sub-distichous, spreading and recurved, two to two and half inches long, linear-oblong, two-toothed at the tip, coriaceous, yellowish-green. *Flowers* large, in few-flowered short, sessile, sub-erect racemes from the uppermost leaf-axils; rhachis of raceme very short, green; bracts minute, obtuse, green; pedicels very slender, with the ovary about an inch and a half long, orange-yellow. *Sepals* and *petals* all alike, rather longer than the pedicels, erect and recurved, narrowly linear-lanceolate, tips obtuse. *Mentum* a quarter of an inch long, truncate. *Lip* rather shorter than the sepals, and of the same colour, erect and incurved; lateral lobes short, rather narrow, notched, or two-lobed at the anterior margin; epichile narrowly tongue-shaped, obtuse, margins deeply sinuously crenate, almost lobulate; disk with three acute keels, of which the median is crenate on the epichile. *Column* long for the genus. *Anther* tumid, anterior margins ciliate.—*J. D. H.*

Fig. 1, lip with one lateral lobe removed; 2, column; 3, anther; 4, pollinia: —*All enlarged.*

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Tab. 7742.

MICHAUXIA Tchihatchefii.

Native of Asia Minor.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Michauxia, *Lher.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 561.)

Michauxia *Tchihatchewii*; herba biennis, elata, erecta, robusta, patule hispida, caule simplici 6–7-pedali setoso-hispido inferne folioso in spicam densifloram elongatam columnarem basi subpaniculatam terminante, foliis patulis et deflexis oblongis lineari-oblongis v. lyratis acutis obtusisve irregulariter inciso-dentatis v. lobulatis et serratis costa crassa infimis 6-pollicaribus in petiolum angustatis superioribus sessilibus v. amplexicaulibus, floribus magnis in fasciculos confertos dispositis inferioribus breviter crasse que pedicellatis superioribus sessilibus, bracteis e basi cordata triangulari-ovatis acuminatis, calycis setaceo-hispiduli laciniis lanceolatis acuminatis, appendicibus deflexis ovato-v. triangulari-lanceolatis, corollæ albæ tubo hemisphærico $\frac{3}{4}$ poll. diam., lobis 8 tubo æquilongis ovato-lanceolatis obtusis recurvis, filamentis triangulari-ovatis fimbriatis, stylo hispido, stigmate maximo oblongo v. ovoideo ima apice 8-lobulato.

M. Tchihatchefii, *Fisch. et Mey. in Ann. Sc. Nat. Ser.* iv. vol. i. (1854) p. 32. *Boiss. Fl. Orient.* vol. iii. p. 892. *Gartenfl.* 1896, p. 173. *Gard. Chron.* 1897, vol. xxi. p. 182, fig. 53.
M. columnaris, *Boiss. in Herb. Kotschy.*

A majestic biennial, discovered in the Cilician Taurus by the late eminent traveller and explorer of Asia Minor, P. de Tchihatchef in 1849, the exact habitat being between Tchataloglou and Yailadjii in Cataonia. More recently it has been collected by the botanical traveller, Kotschy, in the same district, at elevations of two thousand eight hundred feet to five thousand feet above the sea, and amongst other localities in the celebrated defile of Gülek Boghas, by which Alexander the Great entered Cilicia.

The specimen here figured was raised from seed purchased for the Royal Gardens from F. Sündermann, of Lindau, in 1896. It flowered in a sheltered border in June, 1899, and died shortly afterwards.

Descr.—A tall, more or less hispid annual, six to seven feet high. *Stem* very stout, erect, simple, leafy below, passing upwards into a long, erect, cylindric, very dense-fld. spike, four to five inches in diameter, which is some-

times shortly branched at the base. *Leaves* six to eight inches long, spreading and deflexed, narrowly oblong, obtuse, or acute, margins more or less irregularly lobulate or toothed and serrate, lower sometimes lyrate, or narrowed into a short, broad petiole, upper sessile or semi-amplexicaul, midrib very thick. *Flowers* binate, or in fascicles of three, rarely more, two and a half inches in diameter across the corolla-limb, lower shortly pedicelled, upper sessile. *Calyx* hispidly setose, lobes half an inch long, ovate-lanceolate; appendages similar, but smaller, broader, and deflexed. *Corolla* white, tube cup-shaped; lobes eight, ovate-lanceolate, margins fimbriate. *Style* hispid with spreading hairs; stigma very large, oblong or obovoid, tip eight-lobulate.—*J. D. H.*

Fig. 1, stamen; 2, stigma:—*Both enlarged.*

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Tab. 7743.

ERIGERON LEIOMERUS.

Native of the Rocky Mountains.

Nat. Ord. Compositeæ.—Tribe Asteroideæ.

Genus Erigeron, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. ii. p. 279.)

Erigeron (Euerigeron) *leiomerus*; herba perennis, humilis, e basi ramosa, fere glaberrima, ramis spithameis ascendentibus simplicibus monocephalis infra medium foliosis, foliis patenti-recurvis anguste lineari-spathulatis in petiolum angustatis integerrimis læte viridibus apice rotundatis, capitulis 1 poll. diam., involucri hemispherici ¼ poll. longi bracteis appressis linearibus obtusis pruinosis, floribus radii numerosis subtriseriatis tubo brevi, ligula lineari-oblonga pallide roseo-purpurea apice obscure crenata, disci flavis, achæniis teretiusculis pubescentibus, pappi setis albis.

E. leiomerus, *A. Gray, Synopt. Fl. N. Am.* vol. ii. pt. i. p. 211. *Coulter, Man. Bot. Rocky Mt. Region*, p. 171.

Aster glacialis, *Eaton in Bot. King's Exped.* p. 142.

Erigeron leiomerus inhabits the alpine regions of Colorado, Utah, and Nevada, ascending to eleven thousand feet, where it was discovered by Dr. Parry. I gathered it in company with Dr. Gray on Gray's Peak, and in the Sierra Blanca of the Rocky Mountains in 1877. Its habit is that of a dwarf Aster, as may be seen by referring to the figure of the Himalayan *A. Stracheyi*, Hook. f. (tab. 6912), from which genus *Erigeron* is only distinguished by the ray-flowers being in several series.

The figure here given is that of a plant purchased in 1895 of Mr. Sündermann, Nurseryman, of Lindau, which flowered in the Herbaceous ground of the Royal Gardens, Kew, in June of the present year.

Descr.—A glabrous, dwarf, perennial herb, copiously branched from the root. *Branches* about a span long, ascending, slender, each bearing a solitary peduncled head, leafy from the base to about the middle, and with a few narrow linear leaves on the peduncle. *Leaves* spreading and recurved, an inch to an inch and a half long, very narrowly spathulate, narrowed into a petiole, quite entire, tip rounded, bright green. *Heads* about an inch in

diameter. *Involucre* nearly hemispheric, a quarter of an inch long; bracts linear, acute, appressed, green, pruinose. *Ray-flowers* about forty, in two to three series; ligule narrowly oblong, pale rose-purple; disk flowers yellow. *Achene* nearly terete, pubescent. *Pappus hairs* white.—*J. D. H.*

Fig. 1, bract of involucre; 2, ray-flower; 3, disk-flower; 4, style-arms:—*All enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 7744.

POTHOS Loureiri.

Native of China and Tonkin.

Nat. Ord. Aroideæ.—Tribe Orontieæ.

Genus Pothos, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 999.)

Pothos (Eupothos) *Loureiri*; frutex alte scandens, ramulis floriferis paucis gracilibus, internodiis brevibus, foliorum petiolo 4–5-pollicari $\frac{1}{3}$–$\frac{1}{2}$ poll. lato lineari stricto basi et apice rotundato v. truncato læte viridi, lamina $1\frac{1}{2}$–2 poll. longe anguste lanceolata acuminata recurva, pedunculis 2–3 poll. longis gracilibus arcuatis, spatha $1\frac{1}{2}$–2-pollicari lineari v. lineari-lanceolata, spadice 2–4 pollicari stipitata gracili fructifera elongata ad 5-pollicari cylindracea, floribus minutis confertis, filamentis dilatatis infra apicem repente constrictis, antheris minimis, baccis ellipsoideis $\frac{2}{3}$ poll. longis coccineis.

P. Loureiri, *Hook. & Arn. Bot. Beechey Voy.* p. 220. *Schott Aroid.* vol. i. p. 23, t. 49. *Prodr. Aroid.* p. 569. *Engler in DC. Monogr. Phanerog.* vol. ii. p. 87.

P. terminalis, *Hance in Ann. Sc. Nat.* Ser. V. vol. v. (1866) p. 247.

Flagellaria repens, *Lour. Fl. Cochinch.* p. 212; *Ed. Willd.* vol. i. p. 263.

Of the genus *Pothos*, numbering about fifty species, all natives of the tropics of the Old World, *P. Loureiri* is the first figured in this magazine, for the six bearing that generic name all are referable to other genera. These are—

P. cannæfolius, Dryand. (t. 603), which is Spathiphyllum cannæfolium, *Schott.*
P. fœtidus, Ait. (t. 836), is Symplocarpus fœtidus, *Salisb.*
P. pentaphyllus, Willd. (t. 1375), is Anthurium pentaphyllum, *G. Don.*
P. macrophyllus, Willd. (t. 2301), is Anthurium cordifolium, *Kunth.*
P. microphyllus, Hook. (t. 2953), is Anthurium microphyllum, *Endl.*
P. crassinervius, Hook. (t. 2987), is Anthurium Hookeri, *Kunth.*

P. Loureiri is a native of Southern China; where it was collected by Loureiro, and described by him as a *Flagellaria* in his "Flora of Cochinchina," published in 1790. There are specimens in the Kew Herbarium from Macao (Millett), from Tingushan, on the West River (Sampson), and from Tonkin (Balansa). A living plant of it was received at the Royal Gardens, Kew, from that of Hong Kong in 1888, which flowers annually in the Aroid House, where it is trained for twelve feet on a pole. It fruited freely this year for the first time.

November 1st, 1900.

Descr.—A rather slender, branching climber, with aerial roots; flowering branches short; internodes about half an inch long. *Leaf-petioles* four to five inches long by a third to a half inch broad, linear, flat, strict, rounded at both ends, bright green; blades decurved, much shorter than the petiole, linear-lanceolate, acuminate. *Peduncles* two to three inches long, slender, decurved. *Spathe* one and a half to two inches long, linear or linear-lanceolate. *Spadix* stipitate, two to four inches long, cylindric, green, about one-sixth of an inch in diameter. *Flowers* minute, densely crowded. *Berries* ellipsoid, smooth, scarlet, about two-thirds of an inch long, one-seeded.—*J. D. H.*

Fig. 1, portion of spadix; 2, perianth-segment; 3 and 4, stamens; 5, ovary; seed:—*All enlarged.*

W. S. del. et lith.

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Tab. 7745.

DENDROBIUM INÆQUALE.

Native of New Guinea.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498).

Dendrobium (Brevifloræ?) *inæquale*; pseudobulbis erectis quasi dimorphis, aliis foliiferis e basi gracili in laminam oblongam tetragonam valde compressam apice 2–3-foliatam dilatatis, internodiis vaginis ovatis acuminatis albis indutis, aliis longioribus aphyllis e basi gracili in rhachin floriferam 3–4 poll. longam $\frac{1}{3}$ poll. latam ensiformem subfalcatam tetragonam valde compressam productis, foliis 3-pollicaribus oblongo-lanceolatis acuminatis coriaceis, floribus $1\frac{1}{2}$ poll. expans. secundis faciebus alternis internodiorum rhachidis solitariis nutantibus (alabastris foveolis internodiorum immersis), pedicellis $\frac{1}{6}$–$\frac{1}{4}$ poll. longis decurvis bracteis parvis orbicularibus imbricatis tectis, sepalis petalisque conformibus oblongo-lanceolatis acutis recurvis albis, mento 0, labelli basi intus bicornuti lobis lateralibus in tubum extus flavescentem intus purpureo striatum convolutis, tubi ore obliq e truncato in apicem (lobum terminale) late triangularem acutam sensim angustato, columna brevi apice bicornuta.

D. inæquale, *Rolfe in Kew Bulletin*, 1900, *ined.*

A very singular Dendrobe, regarded by Mr. Rolfe as an anomalous species, apparently most allied to *D. euphlebium*, Reichb. f., of Java, though much larger flowered, and very different in the shape of the lip. Anomalous as the inflorescence certainly is, it would not be difficult to reduce it to the type of other species of the genus with compressed pseudobulbs; as for example, *D. anceps*, Sw. (Aporum anceps, *Lindl.*, see tab. 3608), were the flowering pseudobulbs of that plant leafless, and tetragonous as well as compressed. On the other hand, the cavities in which the flower buds of *D. inæquale* are immersed, and the position of these on the faces, instead of the angles of the pseudobulb, are peculiar features.

The plant of *D. inæquale* here figured was presented to the Royal Gardens, Kew, by Messrs. Sander & Co., of St. Albans. It flowered in a tropical house in May of this year.

Descr.—*Leafing pseudobulbs* six to ten inches high, erect, very slender and terete below, dilated upwards,

becoming tetragonous, very strongly compressed, and bearing from the uppermost nodes two or three leaves; upper internodes clothed with white, ovate-lanceolate, acuminate sheaths; flowering pseudobulbs longer than the leafing, very slender and terete below, dilating upwards into a strongly compressed, sub-clavate, tetragonous, sub-falcate, green rhachis three to four inches long by about one-third of an inch broad; internodes about as long as broad, margins acute. *Leaves* about three inches long, ovate-lanceolate, acuminate. *Flowers* secund on one face of the rhachis, solitary, arising alternately from oblong depressions towards the margins of the internodes; pedicels very short, clothed with minute, rounded, imbricating bracts. *Sepals* and *petals* sub-similar, spreading and recurved, oblong-lanceolate, acuminate, white. *Lip* shorter than the sepals, lateral lobes convolute, forming a cylindric tube, pale yellow, streaked with purple within; mouth of tube obliquely truncate, with a short triangular tip representing the terminal lobe; disk with two, stout, erect, basal spines.—*J. D. H.*

Fig. 1, lip; 2, lip with one side-lobe removed; 3, column; 4, anther; 5, pollinia:—*All enlarged.*

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M. & N. del. J. N. Fitch. lith.

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Tab. 7746.

CYPRIPEDIUM guttatum.

Native of N.E. Europe, Asia, and N.W. America.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Cypripedium, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 634.)

Cypripedium (Diphyllæ) *guttatum*; rhizomate repente, caulibus 6–12-pollicaribus laxe pilosis, foliis 2 alternis sessilibus ellipticis v. orbiculari-ellipticis acuminatis v. apiculatis marginibus ciliatis 5–7-nerviis, floribus solitariis albis purpureo maculatis, bracta pollicari ovato-lanceolata foliacea pubescente, sepalo dorsali amplo hemisphærico, lateralibus in laminam angustam bidentatam v. bifidam viridem labello suppositam connatis, petalis lineari-oblongis sigmoideo-falcatis deflexis, labello fere globoso sepalum dorsale æquante ore constricto, columnæ stamineæ lobis lateralibus patentibus 2-lobulatis antheriferis, stamine sterili galeato aureo apicem versus crenulato, stylo decurvo crasso apice dilatato truncato.

C. guttatum, *Sw. in Vet. Acad. Handl. Stockh.* 1800, p. 251. *Lindl. Gen. et Sp. Orchid* p. 529. *Reichb. Ic. Pl. Crit.* vol. iii. p. 8, t. 210; *Fl. Germ.* vol. xiii. pp. 166, 186, t. 495, 520. *Ledeb. Fl. Alt.* vol. iv. p. 174; *Fl. Ross.* vol. iv. p. 88. *Hook. Fl. Bor. Am.* vol. ii. p. 205. *Fl. des Serres*, vol. vi. p. 131, t. 573.

C. orientale, *Spreng. Syst. Veg.* vol. iii. p. 746.

C. variegatum, *Georgi, Itin.* vol. i. p. 232, vol. ii. p. 719 (ex Ledeb.).

The most remarkable character of this beautiful little Lady's-slipper is its extraordinarily wide distribution. It inhabits Central Russia, from the longitude of Moscow to the Ural Mts., thence it extends through northern Asia to Kamtschatka, Manchuria, and the mountains of China from Peking southwards; crossing Behring's Straits by the Aleutian Islds. (in one of which, Unalaska, it has been found) it inhabits Alaska, and extends eastward to the Mackenzie River, where, at Fort Franklin, in N.W. Canada, it was collected by Richardson during his and Franklin's perilous Arctic journey. Nor is its distribution in latitude less notable, being from close upon the Arctic circle in N.E. Asia, and in N.W. America, southward in Asia to the mountains of Szechuen, in China, about lat. 30° N., and to the Eastern Himalaya, in the Tibetan province of Chumbi, between Sikkim and Bhotan, where it has been quite recently discovered by a collector from the Royal Botanical Gardens of Calcutta.

November 1st, 1900.

The specimen of *C. guttatum* here figured was kindly communicated by H. J. Elwes, Esq., F.R.S., from his garden at Colesborne, Gloucestershire, in June of the present year. Roots of it were brought by him from the Altai mountains in 1899, where it was growing in an almost impenetrable forest of *Pinus Cembra*, on the west shore of Lake Teletskoi. The specimen figured is smaller than the average of those in the Kew Herbarium; as in all of these, the leaves turn black in drying.

Descr.—*Rootstock* creeping and rooting. *Stem* six to twelve inches high, softly pubescent with flaccid, spreading hairs. *Leaves* two, alternate, three to five inches long by two to three broad, sessile, broadly or narrowly elliptic, acute, or apiculate, ciliate on the margins, five- to seven-nerved. *Flowers* solitary, bracteate, white blotched with purple, about one and a half inches long from the tip of the dorsal sepal to that of the lip. *Bract* an inch long, ovate-lanceolate, green, pubescent. *Dorsal sepal* hemispheric, lateral united into a two-toothed or bifid, narrow, green blade, placed under the lip, and shorter than it. *Petals* linear-oblong, deflexed, sigmoidly falcate. *Lip* about as large as the dorsal sepal, tumidly saccate, mouth contracted. *Column* with a large, arched, golden-yellow, sterile stamen, crenate at the tip; lateral arms two-lobed, spreading, overhanging the anthers, stigma decurved, stout, tip dilated, truncate.—*J. D. H.*

Fig. 1, rootstock, of the *natural size*; 2 and 3, front and side views of the column:—*Enlarged.*

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Tab. 7747.

DENDROBIUM SPECTABILE.

Native of New Guinea and the Solomon Islands.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Dendrobium, *Sw.*; (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 498.)

Dendrobium (Latouria) *spectabile*; pseudobulbis 1–2-pedalibus cæspitosis simplicibus subclavatis flexuosis apice 3–5-phyllis, internodiis sulcatis supremis vaginis hyalinis deciduis tectis, foliis 5–8-pollicaribus subsessilibus ovato- v. lineari-oblongis obtusis crasse coriaceis supra læte-subtus flavo-viridibus nervis obscuris, pedunculo infra-foliaceo ascendente elongato viridi basin versus vaginis paucis appressis viridibus obtusis aucto, racemo suberecto laxe multifloro, bracteis ovato-lanceolatis herbaceis, pedicellis cum ovariis 2-pollicaribus viridibus, floribus 3 poll. latis albis purpureo striatis et maculatis, sepalis petalisque 1½ poll. longis patenti-recurvis flexuosis marginibus crispato-undulatis, sepalis e basi lata subulato-lanceolatis, petalis angustioribus, labello sepalis paullo longiore, lobis lateralibus brevibus lunatis crenatis columnam cingentibus, terminali anguste panduriformi in apicem recurvam angustatis marginibus valde undulatis, disco basi 3-calloso et lamellis erectis carnosis crenulatis instructo, mento brevi crasso, polliniis 2.

D. spectabile, *Miq. Fl. Ind. Bat.* vol. iii. p. 645. *Rolfe Orchid. Rev.* vol. iv. (1896) p. 356. *Gard. Chron.* 1899, vol. ii. p. 491, fig. 162. *Journ. Hort.* ser. III. vol. xxxix. p. 562, fig. 97. *Cogn. Dict. Icon. Orchid. Dendr.* t. 22. *Kew Bulletin*, 1900, App. II. p. 43. *Sanders Cat. Orchid.* &c., 1899, p. 7, *cum ic.*

D. tigrinum, *Rolfe ex Hemsl. in Ann. Bot.* vol. v. (1891) p. 507.

Latouria spectabilis, *Blume, Rumph.* vol. iv. p. 41, t. 195, fig. 1, and t. 199, fig. c. *F. Muell. in Victorian Naturalist*, vol. i. (1884) p. 52.

This magnificent Dendrobe was discovered in New Guinea by Leschenault de La Tour, naturalist of Baudin's voyage to the Pacific in search of La Peyrouse's lost expedition. La Tour made a drawing of it, upon which Blume founded the genus *Latouria*, which he distinguished from *Dendrobium* by the lateral lobes of the lip, erroneously supposing them to be connate.

More recently it has been found in the easternmost islets of the Solomon Archipelago, namely, in Malaita, whence plants were obtained by Sir Trevor Lawrence, and in San Christoval, where it was collected by the Rev. R. B. Comins in 1890. The specimen here figured was kindly lent by J. T. Bennett-Poë, Esq., of Holmewood, Cheshunt, in January of this year.

December 1st, 1900.

Descr.—*Pseudobulbs* one to two feet high, tufted, narrowly clavate, terete, grooved. *Leaves* three to five, terminal, five to eight inches long, ovate- or linear-oblong, obtuse, flat, coriaceous. *Peduncle* ascending from the pseudobulb below the leaves, stout, terete, green, bearing a few distant, small, oblong, obtuse sheaths. *Panicle* broad, loosely many-flowered. *Bracts* about half an inch long, oblong-lanceolate, obtuse. *Pedicels* with the ovary about two inches long. *Flowers* three inches broad, white streaked and spotted with dark purple. *Sepals* and petals subequal in length, spreading and recurved, almost twisted, margins crispedly undulate; sepals narrowed from a broad triangular base into a subulate-lanceolate tip; petals much narrower, strap-shaped. *Lip* rather longer than the sepals, lobulately undulate; side-lobes small, lunate, together forming a cup around the stout column; mid-lobe narrowly panduriform, terminating in a long, narrow, subulate-lanceolate recurved tip; disk with many thick, crenate ridges, and with three parallel pyriform calli at the base.—*J. D. H.*

Fig. 1 and 2, portion of lip showing the calli; 3, column; 4, pollinia:—*all enlarged*; 5, *reduced* view of whole plant.

M.J. del. J.N. Fitch lith.

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Tab. 7748.

ADESMIA boronioides.

Native of South-Eastern Patagonia.

Nat. Ord. Leguminoseæ.—Tribe Hedysareæ.

Genus Adesmia, *DC.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 517.)

Adesmia *boronioides*; frutex humilis, petalis exceptis glandulis magnis sessilibus verrucosus, ramulis robustis, foliis breviter petiolatis linearibus, foliolis 10–12-jugis cum impari subconfertis fere orbicularibus $\frac{1}{4}$ poll. diam. grosse crenatis supra luride viridibus, petiolo rhachique crassiusculis, racemis elongatis erectis multifloris rhachi robusta viridi, floribus $\frac{1}{2}$ poll. longis, pedicellis brevibus crassiusculis, bracteolis in pulvillum tuberculatum mutatis, calycis campanulati glandulosi et pilosuli lobis obtusis, vexillo orbiculari aurantiaco infra medium purpureo striato, alis oblique oblongis aureis, carina brevi virescente, legumine 3–5-articulato dehiscente glanduloso-piloso et punctis nigris adsperso.

A. boronioides, *Hook. f. Fl. Antarct.* vol. i. pars ii. p. 257. *C. Gay, Fl. Chil.* vol. ii. p. 182.

Adesmia is a large South American genus of plants, consisting of about 170 species, according to the "Kew Index," of which, however, many are no doubt synonyms, for Bentham, in the "Genera Plantarum," says of the 110 species supposed to be known, "plures a diversis auctoribus bis terve repetitæ et vix ultra 80 species bonæ in herbariis nostris servantur." The fact is that the genus has not been monographed since 1825, when nine species only were known to De Candolle, and published in his "Prodromus." One only has been figured in this work, *A. balsamica*, Bert., which yields an exquisite balsamic odour.

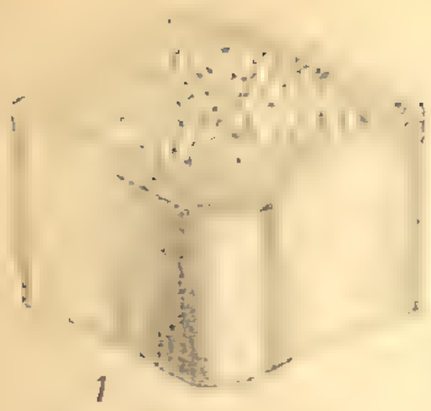
A. boronioides is a native of South-Eastern Patagonia, where it was first collected at Cape Fairweather, in about lat. 52° S. by Capt. King, R.N., during his survey of the extreme south of Chili, Patagonia, and Fuegia. It has since been collected on the hills at the entrance of the Straits of Magellan on the N. side, at Cape Possession, at Mt. Direction, and at Port Deseado. It is described by Dr. Cunningham, in his "Notes on the Natural History of the Straits of Magellan," as forming a shrub with a stem eighteen inches high, covered with glands that yield a viscid substance having a balsamic odour.

The specimen figured was sent to Kew for the determina-

tion of its name in May of the present year by A. K. Bulley, Esq., of Ness, Neston, Cheshire, who raised it from seeds collected by Mr. T. T. Austin in Patagonia. The species has been for some years in cultivation in the open air at Kew, where, however, it has never flowered. Mr. Bulley informs me that with him it forms a hardy evergreen, never suffering from storm or frost, and flowering profusely.

Descr.—A small shrub, warted all over except the petals and leaflets with large balsamiferous glands. *Leaves* one and a half to two inches long, by half an inch broad, shortly petioled, linear, impari-pinnate; leaflets ten to thirteen pairs, close together, sessile, orbicular, coarsely crenate, rather thick in texture, very dark green above, paler beneath; petiole and rhachis stout; stipules obscure. *Racemes* terminal on the branches, erect, three to five inches long, many-flowered; petiole and rhachis stout, green; bracts represented by tubercled cushions at the bases of the very short pedicels. *Calyx* about one-sixth of an inch long, green, hairy and glandular; lobes one-third the length of the tube, obtuse, erect. *Corolla* about three times as long as the calyx. *Standard* bright orange-yellow, with purple streaks from the base to the middle. *Wings* golden-yellow. *Keel* small, pale green. *Pod* an inch to an inch and a half long, glandular hairy, and covered with black spots; joints three to five, tumid.—*J. D. H.*

Fig. 1, portion of rhachis of leaf with a pair of leaflets; 2, portion of rhachis of raceme, with bract, pedicel, calyx, and ovary; 3, stamens and ovary; 4, ovary laid open:—*all enlarged*; 5, pods of *nat. size.*



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Tab. 7749.

DASYLIRION QUADRANGULATUM.

Native of Mexico.

Nat. Ord. Liliaceæ.—Tribe Dracæneæ.

Genus Dasylirion, *Zucc.* (*Benth. & Hook. f. Gen. Plant.* vol. iii. p. 780.)

Dasylirion *quadrangulatum*; caudice robusto, foliis numerosissimis densissime confertis 2-pedalibus exterioribus recurvis interioribus erectis rigidis tetragonis e basi dilatata ad medium compressis deinde æquilateris in apicem pungentem sensim attenuatis tactu asperulis marginibus subscaberulis, scapo 5-pedali robusto foliis setaceis elongatis inferioribus longioribus deflexis superioribus brevibus erectis ornato, inflorescentia paniculata e racemis confertis cylindraceis amentiformibus erectis bracteis immixtis constante, bracteis 6–8 poll. longis spathaceis ovato-lanceolatis acuminatis pallide brunneis albo-marginatis deciduis, racemis 4 poll. longis 1 poll. diam. breviter pedunculatis apice rotundatis, floribus densissime confertis imbricatis, pedicellis vix $\frac{1}{2}$ poll. longis supra medium articulatis basi bracteolatis, bracteolis pedicellis brevioribus cupuliformibus hyalinis erosis, perianthii segmentis late oblongis apice rotundatis, ovario compresso, stigmatibus reniformibus stipitatis, fructu $\frac{1}{5}$ poll. longo orbiculari-oblongo trigono valde compresso coriaceo indehiscente basi perianthio induto apice rotundato bilobo stigmatibus sinu insertis, alis amplis, nuce parvo 1-spermo, semine $\frac{1}{8}$ poll. longo ovoideo compresso-trigono, testa pallida coriacea nucleo adhærente.

D. quadrangulatum, *S. Wats. in Proc. Amer. Acad.* vol. xiv. (1879) p. 250. *Gard. Chron.* 1900, vol. i. p. 244.

Agave striata, *var.* recurva, *Zuccarini, ex Baker in Gard. Chron.* 1877, vol. ii. p. 556.

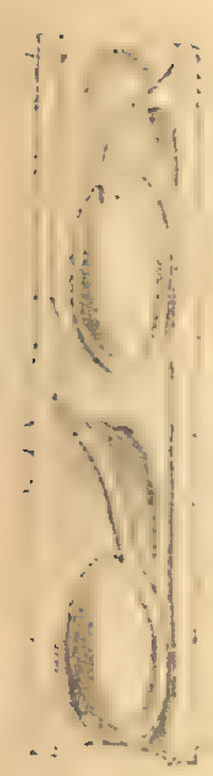
This very remarkable plant is a native of the mountains of the Tamaulipas State of Mexico, at elevations of seven thousand to nine thousand feet, where it was collected by Dr. E. Palmer. It was first described in 1879 by Sereno Watson. But it must have been discovered and seeds sent to Europe before that time, for it was in cultivation in the Royal Gardens, Kew, in 1877, in which year Mr. Baker mentions it in the *Gardener's Caronicle*, under the name of *Agave striata*, var. *recurva*, of Zuccarini. In its native country the trunk is described as three feet to eight feet in height, and the flowering stalk five feet to ten feet; but the latter attains much larger dimensions in Europe, for Mr. Watson mentions a specimen growing in the Jardin d'Acclimatation of Hyères (under the name of *Xanthorrhæa hastilis*), with a scape and panicle together

eighteen feet high, and another also of great size, but not in flower, at the Casino of Monte Carlo, named *D. juncifolium*. The latter specimen was subsequently seen by Mr. Baker in a flowering state, with leaves three feet to six feet long, and scapes fifteen feet to twenty feet high.

The origin of the specimen so long cultivated in the Succulent House of the Royal Gardens, Kew, is unknown. It is a female plant, of very slow growth, the stem being only eighteen inches high; the tuft of leaves is six feet in diameter, the scape eight feet high, and inflorescence two feet.

Descr.—*Trunk* stout, cylindric. *Leaves* (in the Kew specimen) two feet long, exceedingly numerous, densely crowded in a globose head, the outer recurved, inner erect, rigid, tetragonous, flattened from the base to about the middle, narrowed, and equilateral from thence to the pungent tip, surfaces rough to the touch, margins rather rough. *Scape* very stout, clothed with short leaves, the lower of which are deflexed, the upper erect. *Panicle* of numerous, strict, erect racemes of imbricating small green flowers mixed with large white, spathaceous, deciduous bracts, six to eight inches long. *Racemes* about four inches long, shortly peduncled; pedicels about half an inch long, jointed above the middle; bracteoles minute, cup-shaped, membranous, erose. *Segments of perianth* broadly oblong, obtuse. *Ovary* compressed, crowned with three reniform stigmas. *Fruit* orbicular-oblong, trigonous, compressed, about one-third of an inch long, winged all round, tip notched with the stigmas in the sinus, one-seeded. *Seed* minute, ovoid, trigonous—*J. D. H.*

Fig. 1, transverse section of leaf; 2, flowers and bracteole; 3, portion of perianth with stamens:—*all enlarged*; 4, *reduced* view of plant.



Tab. 7750.

MATTHIOLA coronopifolia.

Native of Sicily.

Nat. Ord. Cruciferæ.—Tribe Arabideæ.

Genus Matthiola, *R. Br.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 67.)

Matthiola *coronopifolia*; herba perennis v. suffruticulus ramosus, pilis stellatis cano-puberulus et sparse glandulo-o-pubescens, foliis lineari-oblongis inæqualiter pinnatilobatis v. sinuato-dentatis rarius integris lobulis incurvis obtusis, racemis spiciformibus, pedicellis brevissimis, sepalis lineari-oblongis obtusis, petalorum lamina ¾ poll. longis, lineari-oblonga undulata vinoso-purpurea, siliqua gracili subtereti, stigmate 3-loba v. breviter 2–3-cruri, seminibus oblongis anguste alatis.

M. coronopifolia, *DC. Syst. Veg.* vol. i. p. 173; *et Prodr.* vol. i. p. 134 (*excl. cit. Sibth. & Sm.*) *Presl, Fl. Sic.* vol. i. p. 41. *Guss. Pl. Rar. Sic.* p. 275. *partim*; *Fl. Sic. Synops.* vol. ii. pars i. p. 176. *Bertol. Fl. Ital.* vol. vii. p. 103. *Tenore, Syll. Fl. Neap.* p. 321; *Fl. Nap.* vol. v. p. 66. *Arcang. Comp. Fl. Ital.* p. 31.

M. tristis forma, *Parlat. Fl. Ital.* vol. ix. p. 801.

M. tristis, *var.* bicornis, *Pojero, Fl. Sic.* vol. i. pars i. p. 101.

Leucojum montanum, &c, *Bocc. Mus. Piant. Rar. Sic.* p. 147, t. 111. *Ray, Hist. Plant.* vol. iii. p. 407.

L. minus purpureum, &c., *Barrel. Plant. Gall. Ic.*, t. 999.

Hesperis Sicula coronopifol. &c., *Tournef. Instit.* vol. i. p. 223.

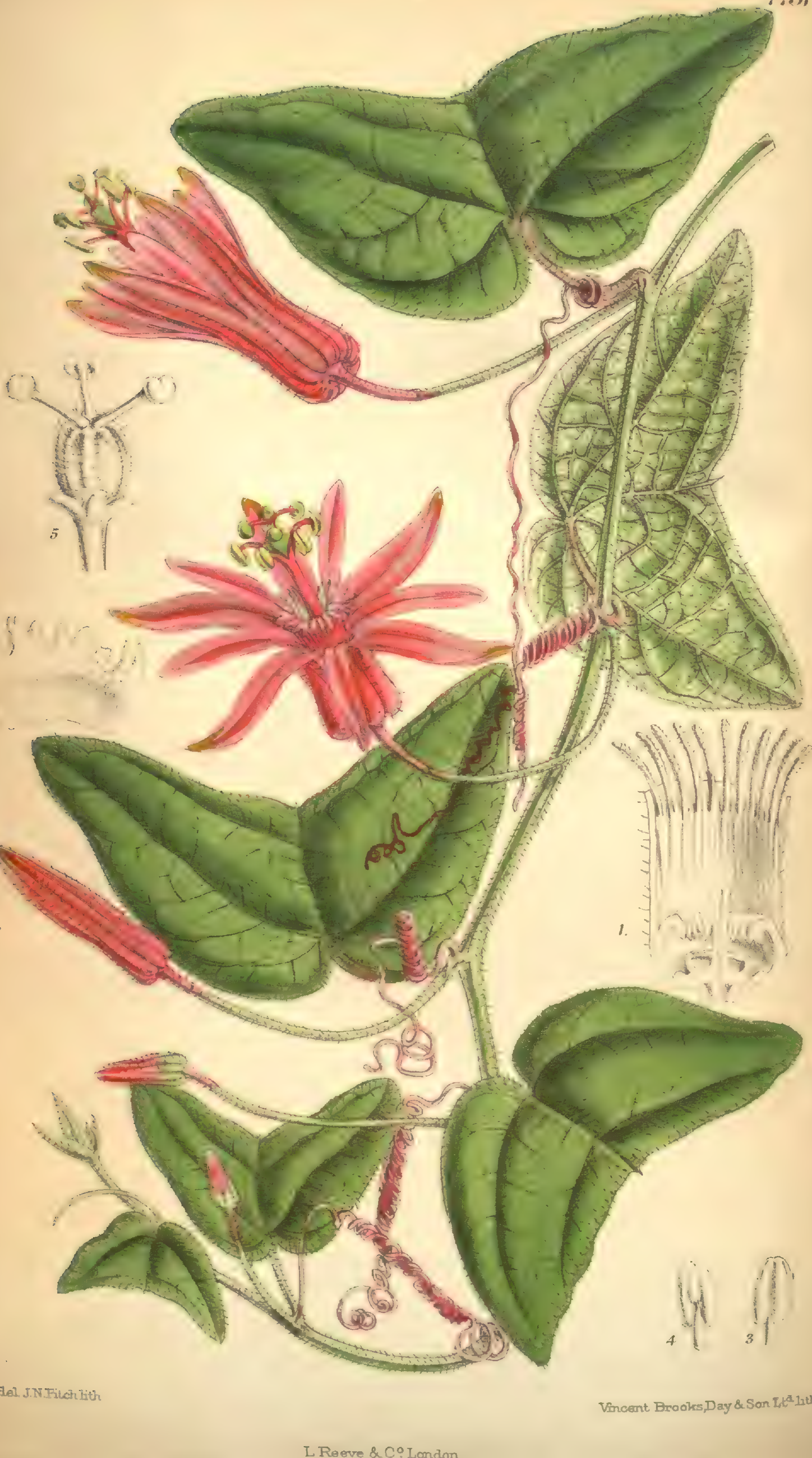
Though referred by Parlatore and Pojero to a form of *M. tristis*, Br., *M. coronopifolia* is retained as a distinct species by most Italian botanists, including the latest of these, Arcangeli. Its sole constant distinctive character is that of the beautiful vinous purple colour of the petals, which was recognized by Boccone (1697), and has been by all subsequent authors, in contrast to the dull yellow or livid, often greenish purple of *M. tristis*. It is singular that De Candolle, and following him some other authorities, whilst recognizing the colour of the petals as distinctive should cite *Cheiranthus coronopifolia* of the "Flora Græca" as a synonym, the beautiful plate in which work is certainly *M. tristis*. Boissier, who unites *coronopifolia* and *tristis* in his "Flora Orientalis" with the character "petalis lividis vel vinoso-purpureis," overlooks the normally pinnatifid character of the leaves of *coronopifolia*, to which it owes

its name, describing these as "integris v. utrinque 1–2-dentato-lobatis."

M. coronopifolia appears to be a very local plant, confined to Sicily, and though some authors cite localities for it in Continental Italy, Arcangeli gives only one, "Parcoe a Cattolico." The specimen here figured was raised from seed supplied by Mr. Sündermann of Lindau, Bodensee, Bavaria; it flowered freely and ripened seeds in the rockery of the Royal Gardens, Kew.

Descr.—A small, branching, perennial herb, or almost an undershrub, covered uniformly with a hoary pubescence of stellate hairs, with here and there a few gland-tipped hairs; branches leafy, straggling, and ascending. *Leaves* two to three inches long, linear-oblong, very irregularly sinuate-lobed or sub-pinnatifid, rarely (except in young plants) entire; lobes usually more or less incurved, obtuse. *Racemes* spiciform from the shortness of the pedicels, few- or many-fld. *Sepals* narrow, obtuse, one half to three-quarters of an inch long; margins membranous, glabrous. *Petals* with the limb of a clear, vinous purple colour, deeper towards the claw, as long as or longer than the sepals, linear-oblong, obtuse, strongly waved. *Filaments* naked; anthers narrow. *Pod* three to four inches long, slender, flexuous, sub-terete; stigma three-lobed, or with two or all the lobes produced into short horns. *Seeds* oblong, compressed, with a narrow, hyaline wing.—*J. D. H.*

Fig. 1, portion of leaf showing the stellate pubescence and gland-tipped hairs; 2, stellate hairs; 3, calyx; 4, stamens and pistil; 5, anther; 6, pod; 7, interior of pod and seeds:—all but fig. 6 *enlarged*.



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Tab. 7751.

PASSIFLORA capsularis.

Native of Brasil.

Nat. Ord. Passifloraceæ.—Tribe Passifloreæ.

Genus Passiflora, *Linn.*; (*Benth. & Hook. f. Gen. Plant.* vol. i. p. 810.)

Passiflora (Decaloba) *capsularis*; cirrifera, ramis gracilibus angulatis pubescentibus, foliis cordatis antice lunato-bilobis sinu mucronatis lobis divaricatis ovatis v. ovato-oblongis apice rotundatis trinerviis supra pilosis subtus tomentosis, petiolo pollicari, stipulis parvis subulatis falcatis deciduis, pedicellis 2–3 poll. longis, alabastris oblongis obtusis, perianthii rosei tubo cylindraceo piloso basi intruso lobulato, sepalis lineari-oblongis obtusis 3-nerviis, petalis sepalis conformibus sed pallidioribus et paullo angustioribus, corona exteriore erecta e filis subclavatis erectis petalis multo brevioribus, interiore brevissima incurva alba plicata crenata, ovario hirsuto, fructu siliquæformi elongato-ellipsoidea hexagona, seminibus ovoideis profunde sulcatis flavescentibus.

P. capsularis, *Linn. Sp. Pl.* p. 957 (*non Bot. Mag.* t. 2868), *DC. Prodr.* vol. iii. p. 325. *Masters in Mart. Fl. Bras.* vol. xiii. pars i. pp. 552 et 589.

P. rubra, *Lamk. Dict.* vol. iii. p. 35 (*non Linn.*). *Griseb. Fl. Brit. W. Ind.* p. 292 (*in part*).

P. pubescens, *H. B. & K., Nov. Gen. & Sp.* vol. ii. p. 132.

P. bilobata, *Vell. Fl. Flum.* vol. ix. t. 78 (*non Juss.*).

P. lunata, *Vell. l.c.* vol. ix. t. 80.

P. piligera, *Gardn. in Hook. Lond. Journ. Bot.* vol. i. (1842) p. 173.

P. foliis bilobis, &c., *Plum. Plant. Am.* p. 129, t. 138, f. 2.

The accompanying figure is that of the true *Passiflora capsularis*, distinguished by its dehiscent, elongate, ellipsoid, hairy fruit; the plant figured under that name at tab. 2868 of this work being *P. rubra*, L., a widely spread native of tropical America. *P. capsularis* appears to be a common plant in Brasil, and has been collected in other parts of the continent of S. America and in the West Indies, but whether in a wild or cultivated state may be doubted. It was introduced into this country by the late Mr. Isaac Anderson Henry, of Trinity, Edinburgh, who sent specimens to Kew in 1880.

The figure is taken from a plant presented to the Royal Gardens, Kew, in 1896, by the late Professor Allman, F.R.S., of Parkstone, Dorset. It flowers freely all the summer in a stove.

December 1st, 1900.

Descr.—A tall, slender climber, with grooved, villously pubescent branches, and axillary red tendrils. *Leaves* three to four inches broad, lunately two-lobed, with a mucro in the sinus, deeply cordate at the base, pubescent above, tomentose beneath; lobes divaricate, obliquely ovate-oblong, obtuse, three-nerved; petiole about an inch long; stipules small, subulate, falcate. *Flowers* solitary, axillary, about two inches broad, rose-red; pedicels two to three inches long, curved, pubescent, jointed one-quarter to half an inch below the flower, green below the joint, red above it. *Calyx-tube* about half an inch long, cylindric, hairy, twelve-lobed at the intruded base; sepals narrowly linear-oblong, obtuse. *Petals* rather narrower and paler than the sepals. *Outer corona* much shorter than the petals, formed of white, sub-clavate threads of equal length; inner short, lobulate, incurved, white, membranous. *Ovary* hairy.—*J. D. H.*

Fig. 1, calyx-tube cut open, showing the two coronas; 2, portion of inner corona; 3 and 4, stamens; 5, ovary:—*All enlarged.*

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